

RG 104 - Entry 23

Box 2 Vol 5 April 19, 1934 - June 30, 1934.
Extra page from 1921 at end.

1906 - 1940

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Superintendent of the Denver Mint by the
Melter & Refiner's Department

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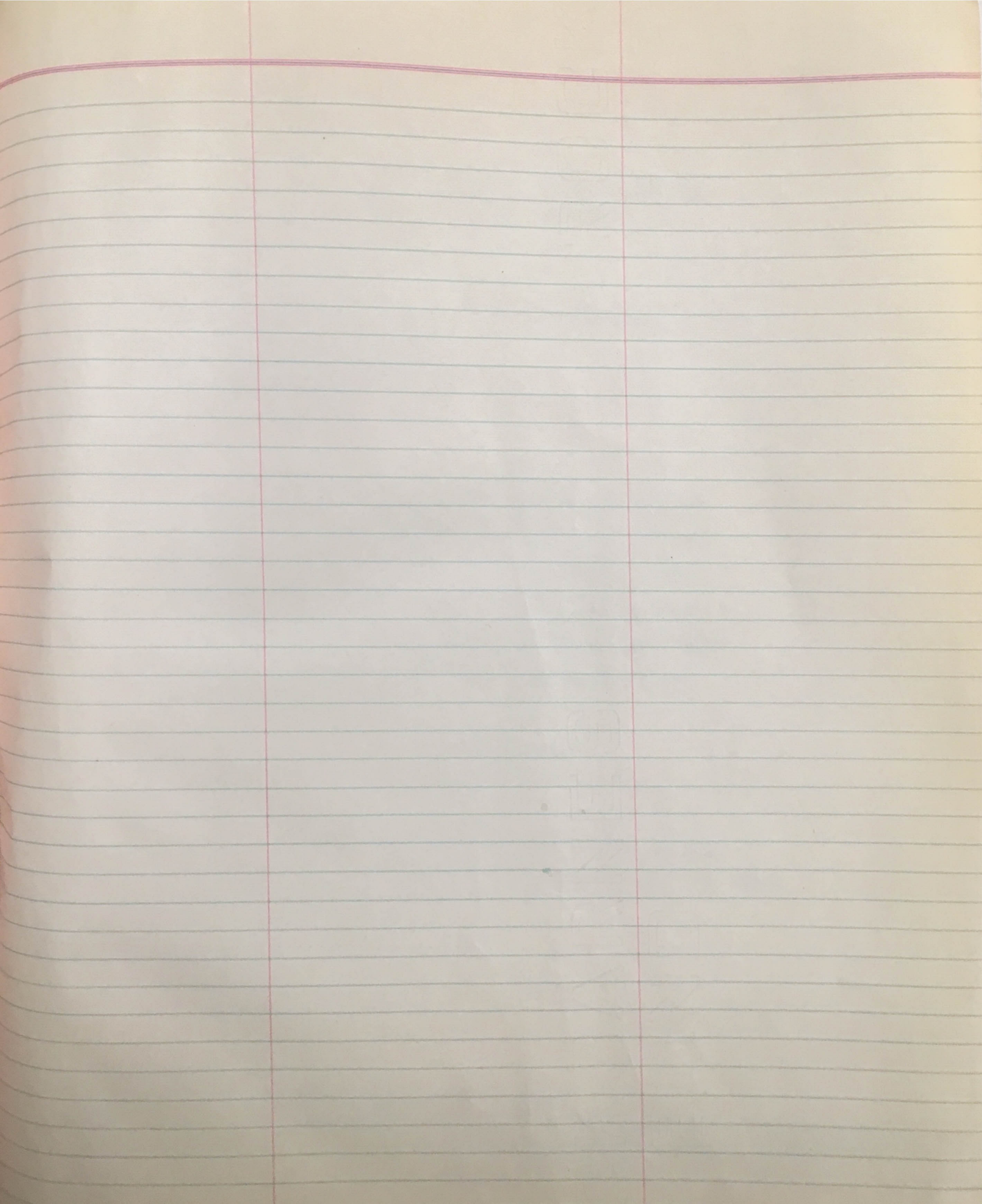
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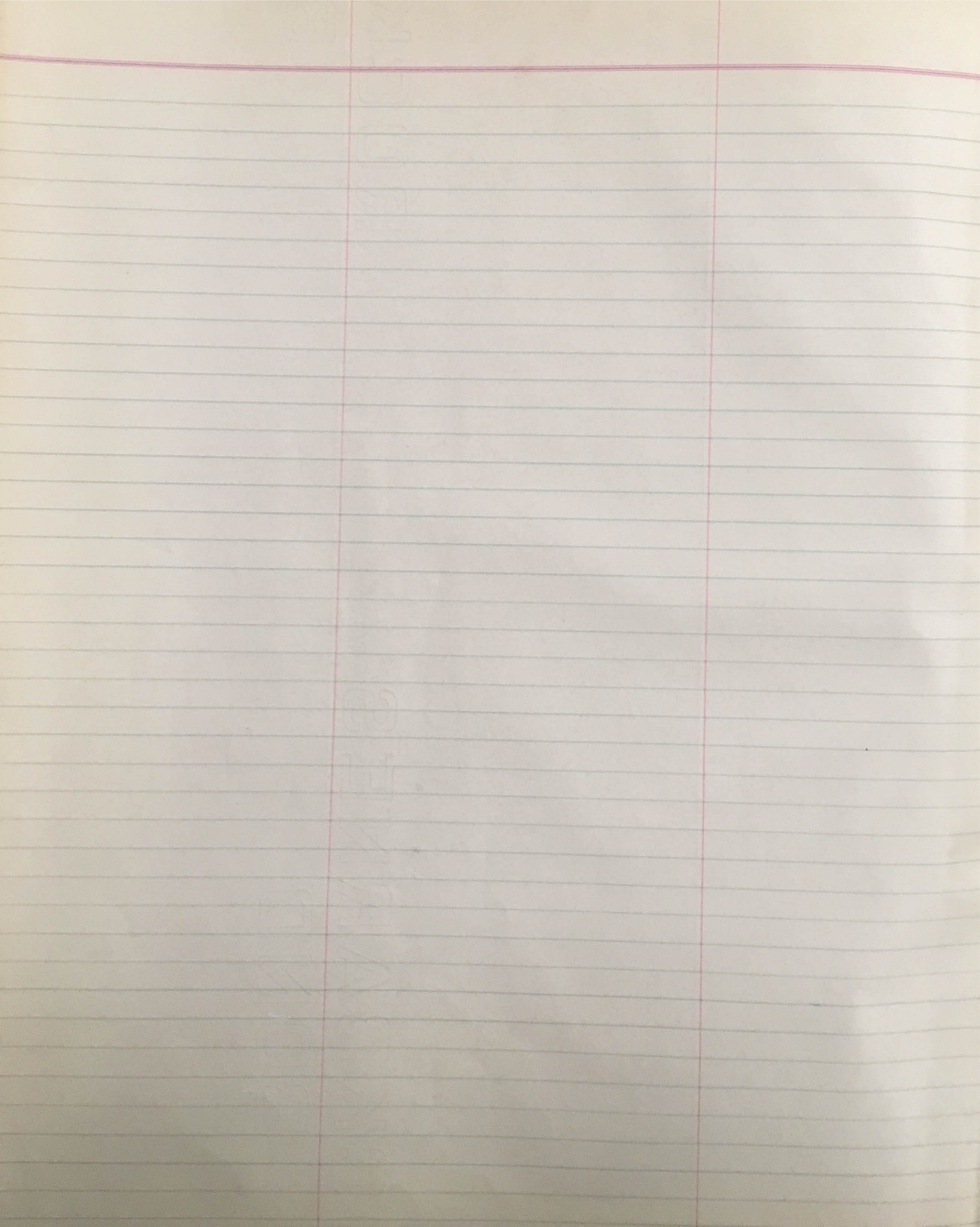
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THE MINT OF THE UNITED STATES AT DENVER,
MELTER AND REFINER'S DEPARTMENT,

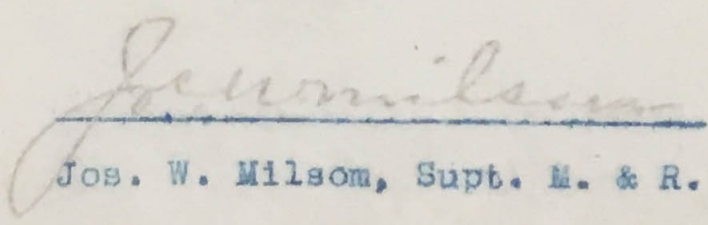
April 19, 1924.

Hon. Frank E. Shepard,
Superintendent U. S. Mint,
Denver, Colo.

Sir:

On the 18th inst. we received from the Cashier 17,569.80 standard ounces of uncurrent half dollars, quarters, and dimes. It will be necessary to melt these coins before settlement in June, and as well any other that may be received in the meantime. Will you please advise me the kind of ingots you desire made from this bullion?

Respectfully,


Jos. W. Milsom, Supt. M. & R. Dept.

THE MINT OF THE UNITED STATES AT DENVER,
MELTER AND REFINER'S DEPARTMENT,

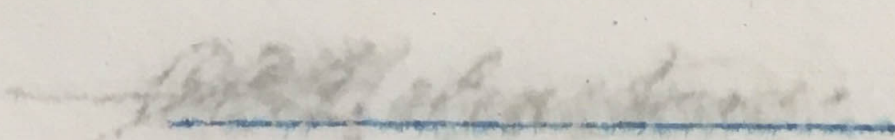
May 2, 1924.

Hon. Frank E. Shepard,
Superintendent U. S. Mint,
Denver, Colo.

Sir:

In compliance with your request regarding the composition of the green stain on the new cathode copper, I find that it is readily soluble in hot water, and analysis of this water proves the stain to be crystallized copper sulphate.

Respectfully,


C. C. Malmstrom,
Assistant Supt. M. & R. Dept.

THE MINT OF THE UNITED STATES AT DENVER,
MELTER AND REFINER'S DEPARTMENT,

May , 1924.

Hon. Frank E. Shepard,
Superintendent U. S. Mint,
Denver, Colorado.

Sir:

We began operations in the Refinery on September 1, 1923, and with the exception of about a month's shut-down in November and December (to clean up and make a settlement on account of the change in Mint Superintendents) we have operated continuously to the present time -- less than seven months.

The gross weight of bullion delivered to the Refinery up to May 1st (which is the date on which all the following figures are based), was 2,722,568.14 ozs., and there have been returned in fine metal 839,670.882 ozs. of gold and 983,601.30 ozs. of silver.

The amount of bullion operated upon, carrying charge, was 1,799,327.77 ozs., and the Parting and Refining charges actually collected on this bullion was \$49,192.09.

The cost of labor (including \$2,394.10 from General Department men), supplies, electricity, oil, coal, and all other expenses, except a comparatively small sum for assaying (which is obtainable from the Refinery at this time), amounted to \$44,323.81, which includes all equipment and installation expenses incurred in June, July, and August, before we started up the Refinery.

As against the Parting and Refining charges collected, this shows a net profit of \$4,868.48, and in a normal year the proportion of profit would be considerably increased, as the expenses would be

THE MINT OF THE UNITED STATES AT DENVER,
MELTER AND REFINER'S DEPARTMENT,

Superintendent - 2

limited to the regular cost of labor and supplies. Even with the added preparatory expenses, the cost of treatment was only one and sixty-two hundredths (1.62) cents per ounce of bullion; and the production cost of fine metal was two and forty-three hundredths (2.43) cents per ounce.

The refined silver on hand May 1st contains 3,131,051.18 fine ounces, of which amount 2,956,370.19 fine ounces is the balance credited to the Pittman or Silver Dollar Bullion account.

Respectfully submitted,



Jos. W. Milson, Supt. M. & R. Dept.

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THE MINT OF THE UNITED STATES AT DENVER,
MELTER AND REFINER'S DEPARTMENT,

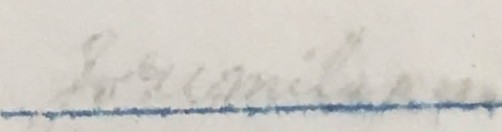
Superintendent - 2

limited to the regular cost of labor and supplies. Even with the added preparatory expense, the cost of treatment was only one and sixty-two hundredths (1.62) cents per ounce of bullion; and the production cost of fine metal was two and forty-three hundredths (2.43) cents per ounce.

In addition to the surplus of \$4,868.48 from Parting and Refining charges, we have recovered eighty ounces of platinum and eleven ounces of palladium, which at present market prices are worth \$10,113.00, making a total net profit to the government of \$14,981.48 from less than seven months' operation of the Refinery.

The unrefined silver on hand May 1st contains 3,131,051.18 fine ounces, of which amount 2,956,270.19 fine ounces is the balance credited to the Pittman or Silver Dollar Bullion account.

Respectfully submitted,



Joe. W. Milson, Supt. M. & R. Dept.

THE MINT OF THE UNITED STATES AT DENVER,
MELTER AND REFINER'S DEPARTMENT,

May 13, 1924.

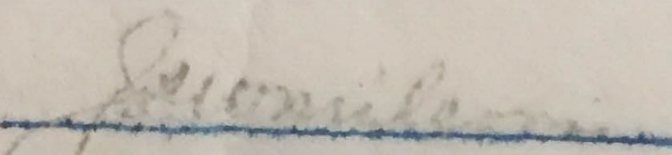
Hon. Frank E. Shepard,
Superintendent U. S. Mint,
Denver, Colo.

Sir:

We have carefully tested the silver anode sack samples received from the Philadelphia Mint, under shipment date of March 17th. The "canvas" sample we had constantly in use, in the electrolyte, for fifty-one (51) days, and only took it out then because we were closing down the cells, and could not use further at this time. The only change apparent was a shrinkage in the depth of about one inch, which can easily be taken care of by making them an inch deeper.

The best sacks we have used during the past year lasted about thirty days, and the poorest about fifteen days. I therefore recommend the purchase from the Philadelphia Mint of five hundred silver anode "canvas" sacks for our use next year, made one inch deeper than the sample furnished (which was given as 24" x 24").

Respectfully submitted,


J. W. Milson, Supt. M. & R. Dept.

THE MINT OF THE UNITED STATES AT DENVER,
MELTER AND REFINER'S DEPARTMENT,

May 14, 1924.

Hon. Frank E. Shepard,
Superintendent U. S. Mint,
Denver, Colorado.

Sir:

Soon after the receipt of the cathode copper you recently purchased for alloy purposes, there was much discussion concerning a green film or stain that made its appearance on the cathodes, and which was supposed by some employees (not of the Melting and Refining department) to be the cause of the Assayer's occasional difficulty in obtaining agreement of assays on ingot samples. Chemical tests showed that the film was copper sulphate, undoubtedly caused by the electrolyte which was not all washed off the cathodes.

Early in May I began a series of tests on ingot melts to ascertain the action of the different kinds of copper used for alloy purposes. The numbers of the melts, the assay results, and a description of the copper used, in all melts tested, follows:-

THE MINT OF THE UNITED STATES AT DENVER,
MELTER AND REFINER'S DEPARTMENT,

May 31, 1924.

Hon. Frank E. Shepard,
Superintendent U. S. Mint,
Denver, Colo.

Sir:

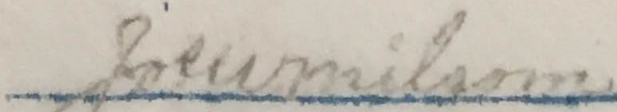
The rectangular stoneware tanks we use for silver cells, obtained from the Wheeling Sanitary Mfg. Co., are of such poor quality that we have only five on hand that do not leak, and some of these are slightly checked and may begin leaking at any time. We should have a complete new set, twelve, of these tanks, of the following sizes:

Length, 48 inches; width, 24 inches; and depth, 24 inches, inside measurements.

The General Ceramics Co., 60 Church St., New York, make these tanks of chemical stoneware, and they would probably be suitable for our purposes. Their stock tanks are ordinarily not intended to meet unusual temperature conditions, but for our silver cell work, there will be neither high temperatures or rapid changes.

We should want "Fig. 202," general catalog of said company (the grooves on the end rim of this tank are not desirable, but they will not interfere with our use). These tanks should be delivered to the Mint not later than the latter part of July,

Respectfully,


Jos. W. Milson, Supt. M. & R. Dept.

THE MINT OF THE UNITED STATES AT DENVER,
MELTER AND REFINER'S DEPARTMENT,

June 30, 1924.

Mr. F. H. Chaffin,
Chairman, Settlement Commission,
U. S. Mint, Denver, Colo.

Sir:

The operations of the Melting and Refining Department from December 3, 1923, to June 30, 1924, show a departmental surplus of 60.819 ozs. of fine gold, and 831.11 ozs. of silver.

At the last settlement (in December, 1923) we did not have time to make a thorough clean-up of the Refinery, and at that time did not clean out the alley tank, settling sump, furnace stack, air course, and three furnaces. We made a very thorough clean-up of all of these at this settlement, and most of our surpluses came from that source. The Assayer returned a surplus of 6.721 ozs. gold and 82.01 ozs. silver, and we made a gain on mass melts of 5.819 ozs. gold and 93.66 ozs. silver.

The Assayer's returns appear unusual, but are accounted for by his shortage at the last settlement, which was incomplete, and showed a loss (in last December) of 5.697 ozs. gold and 85.80 ozs. silver. He made a complete clean-up this settlement, and the results for the year are normal.

Respectfully submitted,

Jos. W. Milson

Jos. W. Milson, Supt. M. & R. Dept.

THE MINT OF THE UNITED STATES AT DENVER,
MELTER AND REFINERS DEPARTMENT.

Memorandum of Gold Ingot melts contained in Gold coin Transfers Nos. 73 and 74 in the Denver Mint, in August, 1934. The Bureau reported the numbers of the melts contained in the respective transfers; and the finenesses are taken from the Assayer's certificates returned to the M. & E. department.

Transfer No 73
Transfer No. 73

<i>828</i>	Melt No. 828	Reported Fineness	.900	<i>900</i>
<i>829</i>	829	.9000		<i>8999</i>
<i>830</i>	830	.9000		<i>9</i>
<i>832</i>	832	.9002		<i>8</i>
<i>834</i>	834	.9003		<i>9</i>
<i>838</i>	838	.9003		<i>8</i>
<i>839</i>	839	.9007		<i>Bureau, 7</i>
<i>840</i>	840	.9005		<i>8</i>
<i>841</i>	841	.9009		<i>9</i>
<i>842</i>	842	.9009		<i>9</i>
<i>848</i>	848	.9003		<i>8</i>
<i>849</i>	849	.9002		<i>8</i>
<i>850</i>	850	.9000		<i>8</i>
<i>851</i>	851	.9002		<i>8</i>
<i>852</i>	852	.9003		<i>8</i>
<i>858</i>	858	.9003		<i>8</i>

Average, .900337
Average *899837*
from this transfer.

Bureau reported .9007 on each of two gold assays
Bureau reported 8997

THE MINT OF THE UNITED STATES AT DENVER,
MELTER AND REFINER'S DEPARTMENT,

Transfer No. 74

Melt No. 717	Reported Fineness	.8999
734		.900
735		.8999
737		.8999
738		.8998
739		.8999
740		.8999
741		.8999
742		.8998
743		.8998
824		.8998
825		.8998
826		.8999
827		.8999

Average, .899871
from this transfer.

Bureau reported .8995 on each of two coin assays

Jos. W. Milson
Jos. W. Milson, Supt. M. & R. Dept.

August 18, 1924.

THE MINT OF THE UNITED STATES AT DENVER,
MELTER AND REFINER'S DEPARTMENT,

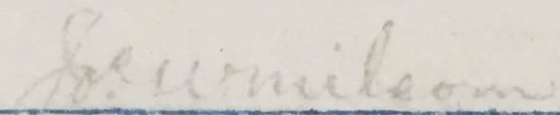
September 6, 1924.

Hon. Frank E. Shepard,
Superintendent U. S. Mint,
Denver, Colo.

Sir:

I obtained from the Coiner the numbers of the gold ingot melts entering into coin deliveries Nos. 76 and 77, and from the Assayer's certificates I find that the average fineness of the melts entering into coin delivery No. 76 was .89982, and of those entering into delivery No. 77 was .89984.

Respectfully,



Jos. W. Milsom, Supt. M. & R. Dept.

THE MINT OF THE UNITED STATES AT DENVER,
MELTER AND REFINER'S DEPARTMENT,

September 22, 1934.

Hon. Frank E. Shepard,
Superintendent U. S. Mint,
Denver, Colo.

Sir:

I hereby tender my resignation as assistant foreman in the Refinery
of the M. & R. Department in the Denver Mint, to take effect on the 30th
inst.

Respectfully,

W. E. Dwyer

THE MINT OF THE UNITED STATES AT DENVER,
MELTER AND REFINER'S DEPARTMENT.

September 22, 1924.

Hon. Frank E. Shepard,
Superintendent U. S. Mint,
Denver, Colo.

Sir:

Referring to the Director's letter of September 17th, relative to discrepancies between Form 900, December, 1923, and Form 900, June, 1924, I beg to submit the following figures in explanation thereof:

	Gold	Silver
On hand (Dec.form)	1,352,081.912	3,122,378.44
Sealed in Vault "L"	337,642.751	847,780.93
D. E. Ingots (see back of Dec.form)	<u>119,112.858</u>	<u>---</u>
Total on hand, Dec. '23	1,808,837.521	3,970,159.37
Clips, etc. (see back of Dec.form)	18,586.088	---
Sweeps	<u>280.098</u>	<u>1,176.12</u>
	18,846.186	1,176.12
Balance (Redel'y to M. & R. Dept.)	1,789,991.335	3,968,983.25

The item, "Sealed in Vault 'L'" should have been in the section below, for items of bullion on hand.

The D. E. ingots and clips items are explained on the back of the December form.

The sweeps which were delivered in the December settlement were retained by the superintendent, and were therefore not included in the item of redelivery to this department.

As to the Nickel wastage, my report of Form 900, sheet 2, shows that we delivered in ingots 274,255.10 ozs., and the wastage was 1,811.60 ozs., making the total operated upon, 276,066.70, which shows that the loss was less than six and six-tenths (6.6) ounces per thousand, and not "in excess of 17 ounces per 1000," as stated in the Director's letter. And, further, all of the ingots were made from condemned and uncurrent coin.

Respectfully,

Joseph W. Milson
Jos. W. Milson, Supt. M. & R. Dept.

THE MINT OF THE UNITED STATES AT DENVER,
MELTER AND REFINER'S DEPARTMENT.

September 25, 1924.

Hon. Frank E. Shepard,
Superintendent U. S. Mint,
Denver.

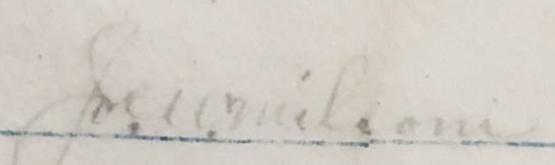
Sir:

I recommend that Harry Baskind be transferred from the position of melter to that of skilled workman, in charge of the silver cells, to fill the vacancy caused by the resignation of R. E. Peirce, assistant foreman of the Refinery.

I also recommend that the title of Assistant Foreman of the Refinery be discontinued.

And I recommend further that the pay of Baskind in the new position be continued at the same rate as at present, viz: \$5.80 per day; and that the change of title and duties become effective on October 1st, 1924.

Respectfully,



Joe. W. Milson, Supt M. & R. Dept.

THE MINT OF THE UNITED STATES AT DENVER,
MELTER AND REFINER'S DEPARTMENT,

September 25, 1924.

Hon. Frank E. Shepard,
Superintendent U. S. Mint,
Denver.

Sir:

The men in charge of the Gold and Silver cells in the Refinery are performing duties of much more importance than those of melters, and the melters receive \$5.80 per day. The Assistant Foreman of the Refinery, R. E. Peirce, who recently resigned, was in charge of the Silver cells and received \$6.00 per day; and I have in a previous communication recommended that his successor be paid \$5.80 per day for the same services, because the position of Silver cell-man is not as important as the position of Gold cell-man. The latter has been receiving only \$5.40 per day--five cents more than a helper--and I therefore most earnestly recommend that the title of the man in charge of the Gold cells be changed from Helper to Skilled Workman; and that the compensation of R. G. Arnold who is a **very careful** and competent workman and who is now and ever since we started the Refinery has been in charge of the Gold cells, be increased to \$5.80 per day, which will give him the same compensation as the Silver cell-man.

This adjustment seems to me quite necessary to equalize the condition and compensation of men performing similar and very important work, and is unquestionably fair and just. I recommend that the increase become effective October 1st, 1924.

Respectfully,

J. W. Wilson
Jos. W. Wilson, Supt. M. & R. Dept.

THE MINT OF THE UNITED STATES AT DENVER,
MELTER AND REFINER'S DEPARTMENT.

September 25, 1924.

Hon. Frank E. Shepard,
Superintendent U. S. Mint,
Denver.

Sir:

The resignation of R. E. Peirce and the appointment of his successor from the force of helpers on cell-work in the Refinery, creates a vacancy that should be filled immediately; and I suggest that W. G. Boswell, now a watchman in this institution, would probably be a very good man to fill said vacancy. And I therefore recommend that he be promoted to the position of Helper in the Refinery at the regular compensation for that position, \$5.35 per day, to take effect on the first prox.

Respectfully,

Jos. W. Milsom
Jos. W. Milsom, Supt. M. & R. Dept.

THE MINT OF THE UNITED STATES AT DENVER,
MELTER AND REFINER'S DEPARTMENT,

September 26, 1924.

Hon. Frank E. Shepard,
Superintendent U. S. Mint,
Denver.

Sir:

The Refinery is in urgent need of a Silver Flat cell tank, to take the place of one we are now using that leaks continuously; and we are unable to stop it. So I recommend the purchase of two tanks, so as to have an extra one on hand in case anything happens to any of the six we are now using.

Those we now have were furnished by the General Ceramics Co., 50 Church St., New York City. They are made of acid-proof chemical stoneware. Inside measurements, length, $39\frac{1}{2}$ "; width, $19\frac{1}{2}$ "; and depth, 10"; and they bear on the end a stamp, "G.A.S.W. 17594." They were furnished under an order marked "C 5," and the voucher carries the dates of delivery as 8/8-1919 and 9/14-1919. What we desire is duplicates of the tanks so furnished in 1919.

Respectfully,


Jos. W. Milson, Supt. M. & R. Dept.

THE MINT OF THE UNITED STATES AT DENVER,
MELTER AND REFINER'S DEPARTMENT.

October 4, 1924.

Hon. Frank E. Shepard,
Superintendent U. S. Mint,
Denver.

Sir:

The following details pertain to the making of gold ingots:

A few minutes after 8 o'clock in the morning, the Make-up room delivers to the Melting room the gold, copper, clippings, and condemned coin and blanks necessary to make four melts of gold ingots, each melt having been made up separately the day before and tagged with its number.

The average weight of a gold ingot melt is 6275 standard ounces, and it consists of 44 ingots of the size required by the Coiner for his work, that is, 12 $\frac{1}{2}$ inches long, 2-9/16 inches wide and one-half inch thick. The first melt comes down ready for pouring in about two hours, and each subsequent melt in about one and three-quarters hours.

After the day's ingot work is completed, the Foreman delivers the ingots, tops, sweat kings, etc., to the Make-up room.

In addition to the foregoing work, the Melter who makes only one melt of gold ingots, also, in another furnace, makes a melt of nickel ingots, either from clippings or uncurrent coin. The former requires about five hours, and the latter about three and one-half hours to melt down ready for pouring.

Four men, namely, a Foreman, two Melters, and one Helper, are employed in this room. The Foreman distributes the made-up metals to the Melters, does bench-work during the pouring of the ingots, looks after the assay granulations, and delivers them to the Assayer; personally does the sweating of charcoal and pot-scrappings, looks after supplies, and has general supervision of all the work. The Melter repairs his furnace, charges the crucible with the metals, regulates the heat of his furnace, dips the molten metal out of the crucible and pours it into the ingot moulds, and assists in the bench-work when the other Melter is pouring. The Helper is a general assistant in all the work. All these men work on the cleaning, topping, and filing of the ingots.

Respectfully,

Joe W. Milson
Jos. W. Milson, Supt. M. & R. Dept.

SUMMARY - M. & R. Dept. D. E. Ingot work for \$8,000,000 per month

Department	Production 2 hours	Clerks	Foreman	Melters	Helpers	Total
Office	Time off	2				2
Make-up Room	28,725			1		1
Ingot Room	28,725		1	2	1	4
Total						7

THE MINT OF THE UNITED STATES AT DENVER,
MELTER AND REFINER'S DEPARTMENT.

Memorandum of SILVER available for Coinage, M. & R. Dept., Denver.

<u>Items of Silver on hand, Sept. 30, 1924:</u>	<u>Fine ounces</u>
Mint Fine bars	1,040,799.60
Purchase bars	152,733.49
Quarter Dollar Ingots	21,919.63
Clips, tops, etc.	1,991.25
Unrefined bullion	<u>3,310,575.67</u>
Total	<u>4,528,020.04</u>

Same for October 21, 1924:

Mint Fine bars	982,413.42 *
Purchase bars	152,733.49 *
Quarter dollar ingots	10,909.08
Make-up for Oct. 21	33,115.30
" " " 22	22,270.00
Unrefined bullion	<u>3,272,577.89</u>
Total	<u>4,454,022.18</u>

* Available for use in Silver coinage after October 22, 1924,

- - - - - 1,167,399.91

Approximate monthly production of Fine
Silver (basis of September, 1924) - - 155,000.00

Approximate monthly consumption of Fine
Silver, 26 days at 10 melts, or
24,000 fine ozs., daily, - - - - - 624,000.00

Respectfully,

W. H. Johnston
Assistant Supt. M. & R. Dept.

THE MINT OF THE UNITED STATES AT DENVER,
MELTER AND REFINER'S DEPARTMENT,

Memorandum of SILVER available for Coinage, M. & R. Dept.

<u>Items of Silver on hand, Sept. 30, 1924:</u>	<u>Fine ounces</u>
Mint Fine bars	1,040,799.80
Purchase bars	152,733.49
Quarter dollar ingots	21,919.63
Clips, tops, etc.	1,991.25
Unrefined bullion	<u>3,310,575.87</u>
Total	<u>4,828,020.04</u>

Same for October 21, 1924:

Mint Fine bars	962,416.42	*
Purchase bars (Silver Dollar Bullion)	152,733.49	
Quarter dollar ingots	10,909.08	*
Make-up for Oct. 21	33,115.50	*
" " " 22	22,270.00	*
Unrefined bullion	<u>3,272,577.89</u>	
	<u>4,454,022.18</u>	

* Available for use in Silver Coinage 1,028,710.80

Approximate monthly production of Fine Silver (basis of September, 1924)	126,000.00
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Approximate monthly consumption of Fine Silver, 26 days, 10 melts per day, or 24,000 fine oza. per day	- - 624,000.00
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Respectfully,


C.C. Malmstrom, Asst. Supt. M. & R. Dept.

October 21, 1924.

THE MINT OF THE UNITED STATES AT DENVER,
MELTER AND REFINER'S DEPARTMENT,

October 23, 1924.

Hon. Frank E. Shepard,
Superintendent U. S. Mint,
Denver, Colo.

Sir:

The following is a report on the operations of the Refinery for 8 hours, based on the amount of bullion received and amount refined in one average month of operations:

Number of fine ounces of Gold in unrefined bullion received from make-up room per 8 hours, - - 1268

Number of fine ounces of Gold refined and returned to make-up room per 8 hours, 92%, or - - 1169

Number of fine ounces Silver received, per 8 hours, - 1728

Number of fine ounces Silver refined, 92%, or - - 1604

Number of employees in melting room, - - - 5

Number of employees in cell room, - - - 9

The average amount of acids used in the cell room per 8 hours is as follows:

Nitric acid,	-	-	-	-	-	-	-	70 lbs.
Hydrochloric acid,	-	-	-	-	-	-	-	43 "
Sulphuric acid,	-	-	-	-	-	-	-	3 "

In the melting room, the nature of the melting varies from day to day; but the approximate amounts of materials used in a month of 26 days are as follows:

Nitre,	-	-	-	-	-	-	-	- 100 lbs.
Borax glass,	-	-	-	-	-	-	-	- 250 "
Bicarbonate of Soda,	-	-	-	-	-	-	-	- 150 "
Charcoal,	-	-	-	-	-	-	-	- 4 sacks
No. 80 Crucibles,	-	-	-	-	-	-	-	- 17

Besides the above are the necessary Stirrers, Quarter-slides, Fire clay, Fire brick, etc.

THE MINT OF THE UNITED STATES AT DENVER,
MELTER AND REFINER'S DEPARTMENT,

Refinery operations - 2

Following is a summary of the distribution of labor, and bullion received and refined:

SUMMARY								
Department	Bullion rec'd per 8 hours		Bullion ref'd per 8 hours		Fore- men	Skil'd W'kmen	Helpers	Total
	Gold	Silver	Gold	Silver				
Mltg. Room	1268	1725	1169	1604	1	2	2	5
Cell Room	1268	1725	1189	1604	1	4	4	9
								14
								<u>1</u>
								15

Respectfully,


C.O. Malmstrom, Asst, Supt. M. & R. Dept.

THE MINT OF THE UNITED STATES AT DENVER,
MELTER AND REFINER'S DEPARTMENT,

October 27, 1924.

Hon. Frank E. Shepard,
Superintendent U. S. Mint,
Denver, Colo.

Sir:

Answering yours of the 24th inst.:

The "temporary helpers" now working in the M. & R. Department, and
the dates of their appointments are as stated in your communication,

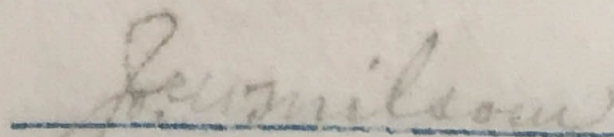
viz:

J. C. Hayes, Sept. 2, 1923.
John B. Henahan, " 10, "
L. T. Monahan, " 11, "
Roy G. Russell, Feb. 20, 1924 ?
A. E. Eggert, April 16, 1924

All of these men are first-class employees, careful, industrious, and
honest, and their experience in our work has brought to each of them
such a degree of efficiency as to fully qualify them for permanent
positions.

I therefore most earnestly recommend that J. C. Hayes, John B.
Henahan, L. T. Monahan, Roy G. Russell, and A. E. Eggert be given
permanent appointments as helpers in the Denver Mint.

Respectfully,



Jos. W. Milson, Supt. M. & R. Dept.

THE MINT OF THE UNITED STATES AT DENVER,
MELTER AND REFINER'S DEPARTMENT,

October 27, 1924.

Hon. Frank E. Shepard,
Superintendent U. S. Mint,
Denver, Colo.

Sir:

Patrick J. Kennon was appointed a temporary helper on January 31, 1924, and assigned to the M. & R. Department, and worked in the Ingot melting room until Sept. 6, 1924, a period of a little more than seven months.

He was a careful and willing workman, and became a first-class helper, and I was sorry to lose him from my force. I think he is fully qualified and deserves a permanent appointment.

Respectfully,

Jos. W. Milsom
Jos. W. Milsom, Supt. M. & R. Dept.

THE MINT OF THE UNITED STATES AT DENVER,
MELTER AND REFINER'S DEPARTMENT,

October 31, 1924.

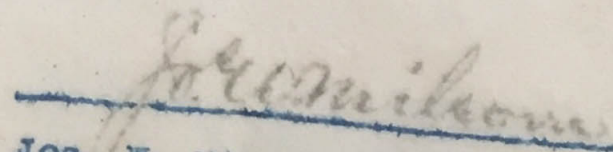
Hon. Frank E. Shepard,
Superintendent U. S. Mint,
Denver, Colo.

Sir:

About a year ago we discussed the matter of procuring large porous cells for use in our copper refining tanks, with Mr. A. Coors, Jr., of Golden, who came to the Mint at our request for the purpose. Mr. Coors stated that he would experiment with the making of such cells, but that he could not say how long it might take to perfect the process; and Mr. Grant, then superintendent of this Mint, told him to go ahead with the project.

Mr. Coors just called me up and said he had made ten of said cells, and asked me how many we needed at this time, and I told him about six, and he said he would send them to us tomorrow. As I remember, these cells are 20 inches long, 18 inches deep, and 2 inches between walls, and are used to keep up the strength of the copper sulphate solution in the copper refining cells.

Respectfully,


JOS. W. MILSON, Supt. M. & R. Dept.

THE MINT OF THE UNITED STATES AT DENVER,
MELTER AND REFINER'S DEPARTMENT,

November 1, 1924.

Hon. Frank E. Shepard,
Superintendent U. S. Mint,
Denver, Colo.

Sir:

The following is a report on the average operations of the Refinery for one day of 24 hours, based on the amount of bullion received and amount refined in one month of operations:

Number of fine ounces of Gold in unrefined bullion received from make-up room - - - - -	3804
Number of fine ounces of Gold refined and returned to make-up room, 92%, or - - - - -	3507
Number of fine ounces of Silver received, - - -	5175
Number of fine ounces of Silver refined, 92%, or -	4812
Number of employees in melting room, - - - -	5
Number of employees in cell room, - - - - -	9

In the month of October, the melting room made 207 melts, aggregating in weight, 805,169.79 ounces.

The average amount of acids used in the cell room is as follows:

Nitric acid, - - - - -	210 lbs.
Hydrochloric acid, - - - - -	129 "
Sulphuric acid, - - - - -	9 "

In the melting room, the nature of the melting varies from day to day; but the approximate amount of materials used in a month of 26 days is as follows:

Nitre, - - - - -	100 lbs.
Borax glass, - - - - -	250 "
Bicarbonate of soda, - - - - -	150 "
Charcoal, - - - - -	4 sacks
No. 80 Crucibles, - - - - -	17

Besides the above are the necessary Stirrers, Quarter-slides,

THE MINT OF THE UNITED STATES AT DENVER,
MELTER AND REFINER'S DEPARTMENT,

Refinery operations - 2

Fire-clay, Fire-brick, etc.

Following is the distribution of labor:

Department	Foremen	Melters	Skilled Workmen	Helpers	Total
Melting Room	1	2		2	5
Cell Room	1		2	2	5

14

Asst. Supt. M. & R. Dept.

1

Total

15

Respectfully,

Jos. W. Milson
Jos. W. Milson, Supt. M. & R. Dept.

THE MINT OF THE UNITED STATES AT DENVER,
MELTER AND REFINER'S DEPARTMENT.

November 17, 1924.

Hon. Frank E. Shepard,
Superintendent U. S. Mint,
Denver.

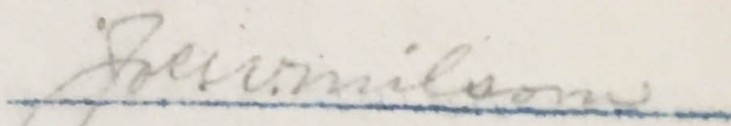
Sir:

In re sample crucibles:

We started to make an experimental run on a lava crucible in ingot work, but after making 15 melts the outside around the top had scaled and burned off so much that it was unsafe to use it further in that work.

In our melting we use a four-inch ring on top of the crucible until all the metal has melted, and we have only one size ring, and that is $10\frac{1}{2}$ inches diameter on the inside, and is so much larger than the top of the lava crucible that it makes a projecting edge around the outside top of the crucible against which the flames drive incessantly causing an intense heat to concentrate around the outside top of the crucible, and that is what caused the said scaling and burning off. If the Lava Crucible Company will furnish two four-inch rings $9\frac{1}{2}$ inches inside diameter, I will immediately make a complete test of their crucibles.

Respectfully,


Jos. W. Nilson, Supt. M. & R. Dept.

THE MINT OF THE UNITED STATES AT DENVER,
MELTER AND REFINER'S DEPARTMENT,

Nov. 29, 1924.

Hon. Frank E. Shepard,
Superintendent U. S. Mint,
Denver, Colo.

Sir:

Referring to the attached letter of The Wahl Co. of Chicago, dated Nov. 24, 1924, which on yesterday was referred to this department:

I have no information concerning the refining equipment or facilities of The Wahl Company, nor of the method of refining. The letter shows a recovery of 258,495 ounces of Gold, Silver, and Copper in 17 lots, but does not even refer to the gross amount of metal operated upon from which the extraction was made; so it would be impossible for me to express any opinion as to what would be a fair charge per ounce for the refining.

The maximum charge that we make under the Bureau regulations is 8½ cents per ounce, based on the weight before refining, and not on the fine product.

Respectfully,

Jos. W. Milson, Supt. M. & R. Dept.

THE MINT OF THE UNITED STATES AT DENVER,
MELTER AND REFINER'S DEPARTMENT.

December 9, 1924.

Hon. Frank E. Shepard,
Superintendent U. S. Mint,
Denver, Colorado.

Sir:

Your communication of the 6th inst. and the accompanying reports of the three coinage mints for the fiscal year 1924, have been carefully considered.

The reports show our cost of making "Merchant bars" was \$1.006 per 1000 ounces. I do not know how that figure was determined, as I did not make any report of cost on that item for 1924, because the amount is always small, and it was included with other melting. The amount given of gold merchant bars is correct; but we also made 3,341.70 ozs. of silver, which is omitted from the statement and as well from the Director's report.

The reports do not show any costs for by-products, which indicates that we did not recover any; but the facts are that we delivered to the Settlement Commission 30.65 ozs. of Platinum and 11.89 ozs. of Palladium, and the expense of the recovery was included in the Refinery costs and not separately determined.

The reports also show a "Coiner, Melter & Ref. wastage" of \$929.22, but the M. & R. department returned a surplus for the fiscal year 1924 (two settlements), of 24.413 ozs. of gold and 1,343.70 ozs. of silver, so that this department should not have been included in any matter of wastage.

The Melting and Refining department is working very efficiently and as well economically, and although I am now operating with less than

THE MINT OF THE UNITED STATES AT DENVER,
MELTER AND REFINER'S DEPARTMENT,

Superintendent - 2

my normal quota of men, I have readjusted my force so that I think I can get by for two or three weeks longer, which, I understand, will carry us through the present emergency.

Cost reports returned herewith.

Respectfully,

J. W. Milson
Jos. W. Milson, Supt. M. & R. Dept.

THE MINT OF THE UNITED STATES AT DENVER,
MELTER AND REFINER'S DEPARTMENT,

December 13, 1924.

Hon. Frank E. Shepard,
Superintendent U. S. Mint,
Denver.

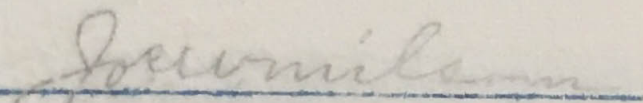
Sir:

The amount of Minor Coinage copper has been reduced to approximately five tons, and as we use about 200 pounds to each bronze melt, the supply will be exhausted very soon if we continue making bronze ingots.

Copper is usually bought in forty-ton lots, and I suggest the immediate purchase of that amount.

The kind of copper necessary for our minor coinage work is the thin bridge variety of ingots, as some of them must be cut in two pieces to place in bottom of crucible.

Respectfully,



Jos. W. Milsom, Supt. M. & R. Dept.

THE MINT OF THE UNITED STATES AT DENVER,
MELTER AND REFINER'S DEPARTMENT,

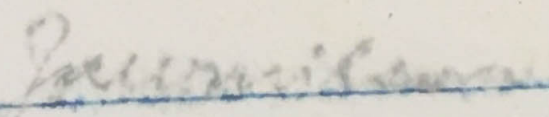
December 13, 1924.

Hon. Frank E. Shepard,
Superintendent U. S. Mint,
Denver.

Sir:

As we have been unable to obtain any porcelain jars,
I recommend the purchase from Dr. Hermon Fleck of three
earthenware jars, thirty-gallon capacity, for immediate
use; and I think it would be well if we would select the
jars, as he has a large number of them.

Respectfully,



Jos. W. Milson, Supt, M. & R. Dept.

THE MINT OF THE UNITED STATES AT DENVER,
MELTER AND REFINER'S DEPARTMENT.

January 12, 1935.

Hon. Frank E. Shepard,
Superintendent U. S. Mint,
Denver.

Sir:

With reference to the Bureau report on a double eagle coin assay .8997 fine in coin delivery No. 90, which you called to my attention this morning, I find the following facts:

The numbers of the melts that entered into said coin delivery No. 90, as reported to me by the Coiner, and the fineness of each melt, as certified by the Assayer, follows:

Melt No.	137	fineness	.8999
"	138	"	.8998
"	139	"	.900
"	140	"	.900
"	141	"	.8999
"	142	"	.8999
"	143	"	.8999
"	144	"	.8998
"	145	"	.8998
"	146	"	.8998
"	147	"	.8999
"	148	"	.8998

These melts were made on September 19th, 22nd, and 23rd, 1924, and the average fineness is .899875.

Respectfully submitted,

Joe W. Milson

Joe. W. Milson, Supt. M. & R. Dept.

THE MINT OF THE UNITED STATES AT DENVER,
MELTER AND REFINER'S DEPARTMENT,

January 19, 1925.

Hon. Frank E. Shepard,
Superintendent U. S. Mint,
Denver.

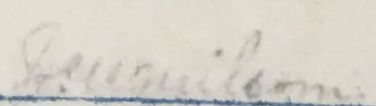
Sir:

Pursuant to your order of December 5th, 1924, Fred N. Hume, melter, was transferred on December 8th, 1924, to the Deposit melting room, thus creating a vacancy in the melting force of the Refinery, which has been temporarily filled by Wilcox, a Refinery melting room helper who has been in the service of this Mint since January 16th, 1906. As acting melter, he has done his part well, and is a very willing workman.

I therefore recommend that Sheridan B. Wilcox be promoted from the position of helper to that of melter, to fill the vacancy caused by the aforesaid Hume transfer to the General department. I further recommend that his compensation be increased to the sum of \$5.80 per day, the regular melter's pay.

This increase does not add anything to the Refinery budget, as Hume was a melter and received a melter's pay.

Respectfully submitted,



Jos. W. Milson, Supt. M. & R. Dept.

THE MINT OF THE UNITED STATES AT DENVER,
MELTER AND REFINER'S DEPARTMENT,

February 6, 1925.

Hon. Frank E. Shepard,
Superintendent U. S. Mint,
Denver.

Sir:

The Goiner informed me that Coin Delivery No. 10 was a small one of \$200,000.00, and contained only two ingot melts, Nos. 234 and 235; and the Assayer's certificate reported each of said melts to be .8999 fine.

Respectfully,

Jos. W. Milson

Jos. W. Milson, Supt. M. & R. Dept.

THE MINT OF THE UNITED STATES AT DENVER,
MELTER AND REFINER'S DEPARTMENT,

February 6, 1925.

Mr. J. C. Wells,
Coiner U. S. Mint, Denver.

Dear Sir:

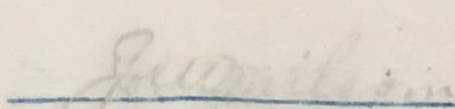
A while ago I informed you that I was looking into the facts concerning the character of the grains you delivered to us, and I now present the ascertained results for your information.

Having noticed that the grains delivered each morning with gold clippings appeared to contain material other than standard gold, on January 9th I directed that such grains be not delivered to the melting room until further orders. At the end of the month we had on hand such grains from twenty consecutive transfers, and the same had been delivered to us as standard gold weighing 15.93 ounces, and charged to this department as 14.337 ounces of fine gold.

On the 2nd inst. I had all these grains carefully melted, and recovered 13.50 ounces, assaying .8479 fine, which gave a gold content of 11.446 fine ounces. This evidences an actual loss to this department in the twenty days of 2.891 ounces of fine gold.

I am making the same test for the current month.

Respectfully submitted,


Joe W. Milson, Supt. M. & R. Dept.

THE MINT OF THE UNITED STATES AT DENVER,
MELTER AND REFINER'S DEPARTMENT.

February 7, 1925.

Hon. Frank E. Shepard,
Superintendent U. S. Mint,
Denver.

Sir:

In response to your request of yesterday, I hereby present an itemized list of Platinum utensils in the possession of the Melting and Refining department, together with the weight of the items respectively:

Article	Grams	Milligrams
Boat	5	3
" perforated	12	990
3" dish	41	707
4 1/2" "	118	10
3" cone perforated	9	824
1" " "	2	435
Spatula	8	407
Crucible 1 1/4" x 1-3/8", perforated		
with cover	15	964
Crucible 1 1/4" x 1 1/4" with cover	25	272
" 1 1/4" x 2" " "	63	838
" 1" x 1 1/4" " "	13	948
Dish, 1" x 1-7/8"	11	982
" 7/16" x 15/16"	2	524
Parting appliance, complete	241	363
Slimer 1-3/8" x 1-5/8"	50	506
Six (6) pieces wire	13	402
Total	636	975

Troy ounces, 20.479

Respectfully submitted,

Joseph W. Milson

Jos. W. Milson, Supt. M. & R. Dept.

THE MINT OF THE UNITED STATES AT DENVER,
MELTER AND REFINER'S DEPARTMENT.

February 10, 1925.

Hon. Frank E. Shepard,
Superintendent U. S. Mint,
Denver.

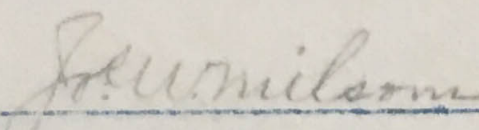
Sir:

We are in need of silver anode sacks in our Refinery work. The material should be a heavy, fine-woven canvas, the same as in the original sample furnished by the Philadelphia Mint, and which is now in your possession. The size and form required are those of the sample presented herewith, and described as follows:

24" wide and $23\frac{3}{4}$ " deep, with a hem around the top $1\frac{1}{2}$ " deep, and a $4\frac{3}{4}$ " slit on each side down from the top.

I would suggest that 500 of these sacks be purchased, as that number would carry us through the present fiscal year, and leave us enough on hand to get the Refinery under way next year.

Respectfully submitted,



Jos. W. Milson, Supt. M. & R. Dept.

THE MINT OF THE UNITED STATES AT DENVER,
MELTER AND REFINER'S DEPARTMENT,

February 17, 1925.

Hon. Frank R. Shepard,
Superintendent U. S. Mint,
Denver

Sir:

I have had the Nichols' cathode copper, recently received, analyzed, with the following results:

Copper, 99 $\frac{1}{2}$ plus per cent., without a trace of either lead or bismuth.

This is as good as, if not better than, any copper we have ever received.

Respectfully,



Jos. W. Milson, Supt. M. & R. Dept.

THE MINT OF THE UNITED STATES AT DENVER,
MELTER AND REFINER'S DEPARTMENT,

March 3, 1925.

Hon. Frank E. Shepard,
Superintendent U. S. Mint,
Denver.

Sir:

Two years ago today, the Hon. R. J. Grant, then Superintendent of the Denver Mint, recommended that my retirement age be extended two years, and gave as his reason for such recommendation this statement: "His familiarity with the work renders his retention desirable."

I have been in this service continuously since September 16th, 1902; and as I am thoroughly familiar with all the details of administration pertaining to this department and as well the results obtained, it may not be amiss at this time to make a brief reference to the latter for your information:

During the past twenty-two years, the Melting and Refining department of this Mint has delivered to the Superintendent a net surplus of more than seventeen hundred fine ounces of gold, and over thirty thousand fine ounces of silver. The parting and refining charges collected from the depositors, on bullion actually operated upon in the Refinery, exceeds one million one hundred thousand dollars, and the by-products recovered amount to nearly ninety thousand dollars.

My present extension of time carries me to the eighth day of next June; and as I am in good health and desiring to remain in the service, I hereby submit this formal request for another extension for the term of two years.

Respectfully submitted,

Jos. W. Milson
Jos. W. Milson, Supt. M. & R. Dept.

THE MINT OF THE UNITED STATES AT DENVER,
MELTER AND REFINER'S DEPARTMENT,

March 10, 1925.

Hon. Frank E. Shepard,
Superintendent U. S. Mint,
Denver, Colo.

Sir:

To ascertain the copper, lead, and iron content of certain refinery sweeps of the current year, we secured as good a sample as could be obtained by careful grab-sampling, and the analysis thereof follows:

Alloy tank:	Gold,	1.02	ozs.	per ton
	Silver,	9.47	"	"
	Copper,	0.50	per cent.	
	Lead,	60.68	"	"
Copper sweeps:	Gold,	0.98	ozs.	per ton
	Silver,	112.52	"	"
	Iron,	22.40	per cent.	
	Copper,	48.85	"	"

My records do not disclose anything concerning lead and copper in the sale of similar sweeps in the past; but I was informed by the Bookkeeper that such sales were made in 1919 and 1920, and his records disclose the following facts:

1919 - Refinery Lot No. 5, weighing 1538 avoird. lbs. contained

Gold,	3.73	ozs.	per ton
Silver,	14.44	"	"
Lead,	24.50	per cent.	
"	paid for, 376.81 lbs.		

1919 - Refinery Lot No. 8, weighing 8150 avoird. lbs. contained

Gold,	23.80	ozs.	per ton
Silver,	65.04	"	"
Copper,	30.34	per cent.	
"	paid for, 2497 lbs.		

THE MINT OF THE UNITED STATES AT DENVER,
MELTER AND REFINER'S DEPARTMENT,

Superintendent - 2

1920 - Refinery Lot No. 3, weighing 7515 avoir. lbs. contained

Gold,	11.75	ozs.	per ton
Silver,	85.45	"	" "
Copper,	10.01	per cent.	
Lead,	14.25	"	"
Copper paid for,	759	lbs.	
Lead	"	"	1071 "

This showing indicates that the said sweeps were sold in separate lots in 1919 and combined in one lot in 1920.

Respectfully submitted,

Jos. W. Milson

Jos. W. Milson, Supt. M. & R. Dept.

THE MINT OF THE UNITED STATES AT DENVER,
MELTER AND REFINER'S DEPARTMENT,

March 26, 1925.

Hon. Frank E. Shepard,
Superintendent U. S. Mint,
Denver.

Sir:

Desiring to enter another line of work, I hereby tender
my resignation from the Mint service, to take effect at the
close of business on the 31st inst.

Respectfully submitted,

J. B. Henrichs

Helper in Refinery.

I recommend that the above resignation be accepted,
and that a competent and trustworthy man be provided to fill
the vacancy on the first day of April.

Jos. W. Milson

Jos. W. Milson, Supt. M. & R. Dept.

THE MINT OF THE UNITED STATES AT DENVER,
MELTER AND REFINER'S DEPARTMENT.

March 31, 1925.

Hon. Frank E. Shepard,
Superintendent U. S. Mint,
Denver.

Sir:

I have interviewed Mr. J. B. Hobson touching his qualifications for the position of Helper in the Refinery, and am favorably impressed with his general knowledge concerning acids and electricity, two of the essentials in Refinery work.

I therefore recommend that he be appointed to the position of Helper in the Refinery, to fill the vacancy caused by the resignation of J. E. Henahan.

Respectfully,


Jos. W. Milson, Supt. M. & R. Dept.

THE MINT OF THE UNITED STATES AT DENVER,
MELTER AND REFINER'S DEPARTMENT,

March 31, 1935.

To Whom It May Concern:

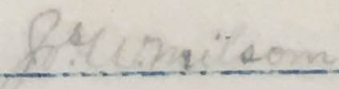
Mr. J. E. Henahan has separated himself from the Mint service by voluntary resignation, to take effect at 4 p.m. this day.

He has worked in this institution for about six years, and since August, 1923, has been employed in the Electrolytic Refinery in my department.

He is an exceptionally good workman, because he always uses his head as well as his hands in the performance of his many duties. He is a clean, energetic young man, earnest in his work, very competent, and always loyal to his employer.

I am very sorry that he resigned, but he believes he can do better financially by entering another line of business, and I earnestly hope his success may be unbounded; and I take this opportunity of expressing my entire satisfaction with his work in my department, and as well my regret at losing him from my force.

Respectfully,



Jos. W. Wilson, Supt. Melting and
Refining Department.

April 13, 1925.

Hon. Frank E. Shepard,
Superintendent U. S. Mint,
Denver.

Sir:

In response to yours of the 26th ult.:

The "Concretion," Assay No. 1, is the scale from inside the 4-inch pipe running from alley tank to sewer, and is an accumulation of eight or nine years; and the gross amount of scale recovered is so small that the actual loss in either gold, silver, or lead from this source is negligible.

The "Solution," Assay No. 2, is the waste solution that discharges from the west end of the alley tank and flows thence to the sewer. This assay (No. 2) shows a trace of gold, and one hundredth of an ounce of silver to the ton, with 2.49 grams of lead to the liter, and no copper.

Our estimate on the average amount of solution discharged daily into the alley tank is 3000 liters; so the loss in silver during an average year's operation of the Refinery, 273 days, based upon said assay, is nine ounces, and the loss in lead during the same period is 4495 pounds. These solutions vary very much in lead content, and to secure some kind of an average we took ten samples, at different times, and the resulting assays were as follows:

Superintendent - 2

No. 1	Trace only of lead, not titrated.			
2		do		
3		do		
4	.007	g. pb. per l. --	12	lbs. of lead per year
5	.009	do	16	do
6	.012	do	21	do
7	.242	do	437	do
8	.227	do	408	do
9	.256	do	462	do
10	.333	do	601	do

Samples 1, 2, and 3 were taken near the same time; as also were Nos. 4, 5, and 6. The last four samples are not very far apart; No. 7 was taken Saturday evening; No. 8, Sunday morning; No. 9, Sunday afternoon; and No. 10, Monday morning -- covering a period of about forty hours.

The average of these last four tests shows a loss of 477 pounds of lead per year, and I believe that that amount approximates the loss made under existing conditions.

The foregoing facts indicate that the Assayer's sample could not have been, even approximately, representative of the average solution.

No consideration has been given to the cost necessary to salvage this lead, but it would require new tank equipment at the beginning, and the continuing expense of precipitating material, and additional work.

Respectfully,

Joe W. Milsom
 Joe. W. Milsom, Supt. M. & R. Dept.

June 20, 1925.

Hon. Frank E. Shepard,
Superintendent U. S. Mint,
Denver.

Sir:

This department having been engaged in clean-up work for settlement ever since the receipt of the Gautier No. 80 crucibles, it was impossible to test them along all lines of our crucible work.

Refinery melting room: We used them on "sweats" and they commenced to scale on the first day, and the second day scaled off so much that the foreman deemed them unsafe for further use.

The crucible wear is nearly the same on sweats, silver anodes, and fine silver; and these tests show the Gautier to be safe for six melts, whereas our old crucibles make from nine to fourteen melts.

Ingot melting room: Yesterday we used a Gautier crucible on silver ingots, making three melts, and the crucible is in fair condition except that it is badly checked, thus indicating that another day's use would cause serious scaling.

We also used five Gautiers on sweats, and made four melts each in three of them, and although they scaled badly I think they would be safe for two more melts apiece.

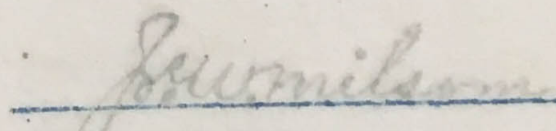
There is this material difference between our old crucibles

Superintendent - 2

and the Gautiers -- the former fuse hard on the outside, but do not check or scale until after considerable use; while the latter check even in our regular tempering operations, and scale off badly on the second day. This difference was clearly evidenced in the crucibles I called to your attention in the Ingot room, as you will remember one of our old crucibles that had made twelve melts of gold ingots and two sweats was in better condition than the Gautiers that had made only four sweats.

Our old crucibles on ingot work average twelve melts of gold, or fifteen of silver, or ten of bronze; and after that some of them are used for sweats. Judging by our observations and the results obtained in the limited tests made, the Gautier crucible cannot closely approximate that record.

Respectfully,



Jos. W. Milsom, Supt. M. & R. Dept.

M. & R. DEPARTMENT

Bullion and Metals on Hand at Close of Business, June, 1925

Gold

	Fine ozs.
Standard bars	12,805.967
Certificate bars	99,207.894
D. E. Ingots	23,202.450
Unrefined	<u>541,943.711</u>
Total	<u>677,160.022</u>

Silver

Purchase bars (fine)	152,733.49
Mint fine bars	1,331,417.31
Unrefined	<u>2,930,503.64</u>
Total	<u>4,414,654.44</u>

Minor Coinage Metals

	Troy ozs.
Copper	991,766.39
Nickel	289,986.37
Tin	4,063.68
Zinc	<u>29,141.50</u>
Total	<u>1,284,957.94</u>

Jos. W. Milson
 Jos. W. Milson, Supt. M. & R. Dept.

July 1, 1925.

M. & R. Dept.

Settlement Commission - 2

The Assayer had a surplus of gold, 0.197 ounces, and silver, 18.68 ounces, which is normal.

The Ingot room operated upon 5,294,588.746 fine ounces of gold, and 1,752,663.74 fine ounces of silver, and returned a surplus of 515.159 ounces of gold, and 1,053.92 ounces of silver. The gold surplus was obtained in part from the difference in the fineness of the ingots, as we were given credit for them at .900 fine, although the actual fineness of many of them was a small fraction below .900; but all were good ingots and made good coin.

However, there is another and very important element to be considered in connection with the ingot work, and that is the use of cathode copper for alloy purposes. I can show the comparison more clearly by taking into consideration the silver ingot work: We make up our silver ingot melts at .899 fine, but get credit for .900 on delivery, but the gain on the make-up inures to the department, and not to the ingot room, as the latter is charged at standard fineness on the make-up. For instance, in the fiscal year 1922 the Ingot room had an operating wastage of 8,201.31 ounces of silver, but the department had a surplus of 3,001.11 ounces; and in fiscal year 1923 the Ingot room had a wastage of 5,932.40 ounces of silver, but the department had a surplus of 7,626.55 ounces, using ingot copper each year. I have examined our records for the past eleven years, and I find that the Ingot room never had an operating surplus in silver until last

M. & R. Dept.

July 7, 1925.

Messrs. F. H. Chaffin,
Charles Gammon, and
Carl Emge,
Settlement Commission.

Gentlemen:

The Melting and Refining department of the Denver Mint emerged from the fiscal year of 1925 with a gold surplus of 403.502 ounces, and a silver wastage of 972.31 ounces, as disclosed by your settlement of my accounts.

The Refinery was in operation nine months, and produced 974,668.699 ounces of fine gold of an average fineness of .999895 plus (in fact, only five melts assayed below .9999, and those ran .9998), and 1,457,069.57 ounces of fine silver; but the Refinery clean-up disclosed a wastage of 99.835 ounces of gold and 2,547.84 ounces of silver. This gold wastage was caused by the character of the bullion operated upon, and by that portion of the platinum that would not part from the gold in the regular assay work, and so was charged to us as gold in the deposit bars.

The Refinery returned in sweeps paid for on May 7, 1925, 32.526 ounces of platinum, and 7.980 ounces of palladium; and in sponge to your commission 282.870 ounces of platinum and 71.950 ounces of palladium, making a total of platinum, 315.396 ounces, and of palladium, 79.930 ounces.

The silver wastage is very unusual, and although I have investigated the matter quite thoroughly, I have not yet found any solution of the problem.

M. & R. Dept.

Settlement Commission - 3

year when we commenced to use cathode copper. But the surplus last year was partially accounted for by the fact that we cleaned out an old settling chamber which had in it several years' accumulation; but this year there was no chance to recover from any old accumulations. Yet the Ingot room, using cathode copper exclusively, shows an operating surplus in silver of 1,053.92 ounces, and that surplus can only come from the use of cathode copper for alloy, and a similar gain from the same source must accrue on the gold ingot work.

The Ingot room operated upon nearly one hundred and ten million dollars' worth of fine gold, so that its gain amounted to one ounce in two hundred and twelve thousand dollars.

Refinery earnings:

P. & R. charges collected on bullion worked,	\$71,461.59
By-Products	42,980.33
Gold surplus	<u>8,341.12</u>
Total	\$122,783.04
Less silver wastage	<u>670.89</u>
Total, net	\$122,112.15

Respectfully submitted,

Joseph W. Milsom
 Jos. W. Milsom, Supt. M. & R. Dept.

August 3, 1925.

Hon. Frank E. Shepard,
Superintendent, U. S. Mint,
Denver, Colorado.

Sir:

I have been advised that

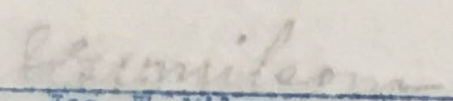
Wm. M. Bush

will reach the retirement age on October 7th, 1925, and that he desires to continue in the Service.

Mr. Bush is Foreman of the Ingot Melting Room, in my department, and has always done good work. He is careful and economical and gets along very nicely with the men who work under his supervision.

Having carefully considered the matter I recommend that he be granted an extension of two years' time on his retirement age.

Respectfully submitted,



Jos. W. Milson,
Superintendent M. & R. Dep't.

THE MINT OF THE UNITED STATES AT DENVER,
MELTER AND REFINER'S DEPARTMENT,

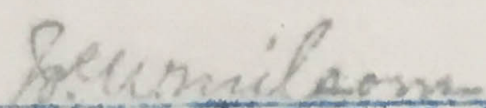
August 24, 1925.

Hon. Frank E. Shepard,
Superintendent U. S. Mint,
Denver, Colo.

Sir:

One of the Dixon crucibles, for testing, is in the Refinery melting room, and the other is in the Ingot melting room; and after the same process of tempering as our old crucibles are subjected to, they will be used in our regular work and upon completion of our tests, I will promptly inform you of the results.

Respectfully,


Joa. W. Milson, Supt. M. & R. Dept.

THE MINT OF THE UNITED STATES AT DENVER,
MELTER AND REFINER'S DEPARTMENT.

August 25, 1925.

Hon. Frank E. Shepard,
Superintendent U. S. Mint,
Denver, Colo.

Sir:

In connection with our other work, we were engaged in making tests of the Gautier crucibles practically all of last week in both the Refinery and Ingot melting rooms; and the work, particularly in the Ingot melting room, was done under the observation of Mr. G. F. Fynn, representing the Gautier company, to whom every opportunity was extended to enable him to arrive at a definite conclusion regarding the quality of the Gautier graphite goods as used in our operations.

In the Ingot room, on Bronze work, we got nine melts to the crucible, and the crucible lost in weight from scaling $13\frac{1}{2}$ pounds, and was then unfit for any further use. Using one of our old crucibles on the same days and one additional, we got twelve melts, and the crucible lost in weight only 3 pounds.

On Silver ingot work, the Gautier crucible gave us nine melts, and our old crucibles give us fifteen melts.

The Gautier is a very slow crucible; so to get out our work we forced the fire all the time, and even then they required at least twenty minutes longer to each melt, and with the same heat regularly used on our old crucibles we could not have finished our day's work with the Gautier in eight hours; and even with the increased heat (using much more fuel) we fell short on Tuesday and could not put any clippings in the last Bronze melt, and so had to

THE MINT OF THE UNITED STATES AT DENVER,

MELTER AND REFINER'S DEPARTMENT,

Supt. - Gautier Crucibles - 2

pour it nine ingots short. In fact, the first melt of Bronze that day, with a forced fire, required three hours and ten minutes to bring it to the pouring point; and the usual time with our old crucible is about two hours and fifteen minutes.

In the Refinery, we used five Gautier crucibles on Silver anode melts. Two lasted nine melts each; two, seven melts each; and on the other we tried for the tenth melt, and through careful handling it did not break, but it lost 23.2 pounds from its original weight of 43½ pounds, and its condition indicated that we were fortunate in not having a spill.

Our old crucibles in Refinery work give us an average of at least twelve melts, because after the regular melts they are used to make three or more sweat melts; and the Gautier crucibles cannot be used for making sweats after making the number of melts hereinbefore stated, because in making these tests we ran them until they were used up completely.

Further, the Gautier crucible scales badly, and many of the scales drop off the crucible and fuse to the bottom of the furnace; so each morning before using the furnace it is necessary for the melter to use a crowbar and dig out the scales that have fused in the bottom. This requires fifteen to twenty minutes, and what is of more importance, the repeated digging out of these scales injures the base of the furnace to such an extent that it would not be long until we should have to tear down the furnace to replace the heavy

THE MINT OF THE UNITED STATES AT DENVER,
MELTER AND REFINER'S DEPARTMENT.

Supt. - Gautier Crucibles, etc. - 3

bottom fire-clay slab. We do not have this trouble with our old crucibles; in fact, during the entire fiscal year ending June 30, 1925, we did not tear down any furnace in either melting room.

The Gautier lids or covers have a solid round knob on top, instead of a hole, which necessitates the making and using by each melter of an additional tool, because the lifting of a Gautier crucible cover requires a specially made pair of tongs. The melters heretofore have always used one tool, a poker, to take off the furnace cover, lift the lid, and to push down the clippings in the crucible.

The Gautier No. 4 cup weighs three pounds, and its inside angles are five inches. The Dixon No. 4 cup which we have been using and which is very satisfactory weighs two and three-quarters pounds, and its inside angles are $4\frac{1}{2}$ inches, and it is three-eighths of an inch shorter than the Gautier. Further, the angle sides of the Gautier cup are not straight, which they should be to give safe service, because the tongs must have a surface to grip all along their face so as to give a strong, firm hold on the cup. But with the Gautier the tongs could connect only at the two ends; therefore, the Gautier No. 4 cups recently received are unsuitable for any kind of use in this department.

Respectfully submitted,

Joseph Wilson Supt. M. & R. Dept.

THE MINT OF THE UNITED STATES AT DENVER,
MELTER AND REFINER'S DEPARTMENT.

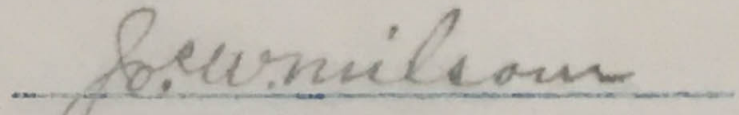
August 25, 1925.

Hon. Frank E. Shepard,
Superintendent U. S. Mint,
Denver, Colo.

Sir:

The Oliver No. 9 Typewriter in my office has been in use constantly for nearly twenty years, and Mr. St. John has made repairs on it occasionally; but it now needs a complete overhauling by an expert workman; and I recommend that the same be done as soon as convenient.

Respectfully,



JOS. W. MILSON, Supt. M. & R. Dept.

THE MINT OF THE UNITED STATES AT DENVER,
MELTER AND REFINER'S DEPARTMENT,

September 8, 1925.

Hon. Frank E. Shepard,
Superintendent U. S. Mint,
Denver.

Sir:

Responding to the inquiry of the honorable Director
of the Mint, under date of September 3, 1925:

In the report of Refining operations, as presented
in the annual report for fiscal year 1925, the item of
12,302.840 ounces of gold, .992 and over in fineness,
should have been placed on the line ".992 and over,
required to aid processes," and not on the line above.

Respectfully,



Jos. W. Milson, Supt. M. & R. Dept.

THE MINT OF THE UNITED STATES AT DENVER,
MELTER AND REFINER'S DEPARTMENT,

September 10, 1925.

Hon. Frank E. Shepard,
Superintendent U. S. Mint,
Denver.

Sir:

We have tested the Dixon crucibles, with the following results:

In the Ingot room, we made ten melts of bronze before rejecting the crucible; but each melt required from 20 to 25 minutes more time than our old crucibles, and from the latter we get twelve melts.

In the Refinery, we made nine melts of silver anodes in a Dixon crucible, and then it was unsafe for further use. We get twelve melts of silver anodes from our old crucibles, and they require 20 to 25 minutes less time to the melt than the Dixon. The latter scaled more than our old crucibles, as shown by the tests in which the Dixon in nine melts lost 28½% of its original weight, and our old crucible in twelve melts lost 17% of its original weight.

Further, the Dixon is considerably smaller and actually holds 3½ quarts less than our old crucible, and its use would compel us to lower the weights of all our melts which would reduce the amount we could melt to such an extent that under existing conditions it would be a serious detriment to our work.

Respectfully submitted,

Jos. W. Milsom
Jos. W. Milsom, Supt. M. & R. Dept.

THE MINT OF THE UNITED STATES AT DENVER,
MELTER AND REFINER'S DEPARTMENT.

September 14, 1925.

Hon. Frank E. Shepard,
Superintendent, U. S. Mint,
Denver, Colo.

Sir:

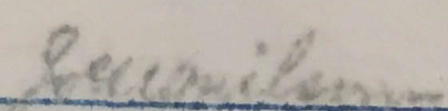
Pursuant to your order of November 25, 1924, Fred N. Hume, melter, was on December 8, 1924, transferred permanently to the Deposit melting room, thus creating a vacancy in the melter force of the Refinery, which has been temporarily filled by Wilcox, a Refinery melting room helper, who entered the service of this institution on January 16, 1906.

Ever since said December 8th of last year, he has been engaged in running a furnace and performing a regular melter's duties on a helper's pay. He has done his work satisfactorily, and is at all times very willing to help out in any way.

I therefore recommend that Sheridan B. Wilcox be promoted from the position of helper to that of melter, to fill the said vacancy, and that his compensation be increased accordingly.

This increase does not add anything to the Refinery budget, as Hume was a melter and received a melter's pay.

Respectfully submitted,



Jos. W. Milsom, Supt. M. & R. Dept.

THE MINT OF THE UNITED STATES AT DENVER,
MELTER AND REFINER'S DEPARTMENT,

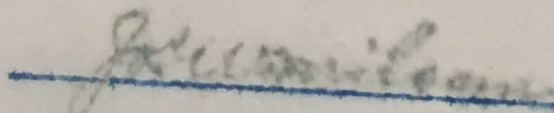
September 15, 1925.

Hon. Frank E. Shepard,
Superintendent U. S. Mint,
Denver, Colo.

Sir:

The total amount of minor coinage copper on hand this day is 545,600 ounces, and we are using daily 27,500 ounces, so that the amount now on hand will run us twenty days at our present rate of ingot production. I suggest the purchase of forty or eighty tons of minor coinage copper, the amount depending on the continuance of our present schedule, as we are using nearly a ton a day. The Nichols cathode copper is the most suitable to our work of any copper that we have ever used.

Respectfully,



Jos. W. Milsom, Supt. M. & R. Dept.

THE MINT OF THE UNITED STATES AT DENVER,
MELTER AND REFINER'S DEPARTMENT.

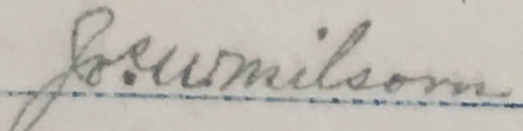
September 30, 1925.

Hon. Frank E. Shepard,
Superintendent U. S. Mint,
Denver.

Sir:

Mr. St. John, representing the Dixon Crucible Company, in a conversation just concluded, has thrown much light on the matter of the two Dixon crucibles recently tested. He informed me that they were not their best crucibles, but were samples of an old lot which the company intended to sell to us very cheap if we could use them. I told him the results of the tests and also called his attention to the fact that the crucibles were much smaller than the crucibles we are using, and for that reason alone were uneconomical and unsuitable for our purposes.

Respectfully,



Jos. W. Milson, Supt. M. & R. Dept.

THE MINT OF THE UNITED STATES AT DENVER,
MELTER AND REFINER'S DEPARTMENT,

October 28, 1925.

Hon. Frank B. Shepard,
Superintendent U. S. Mint,
Denver.

Sir:

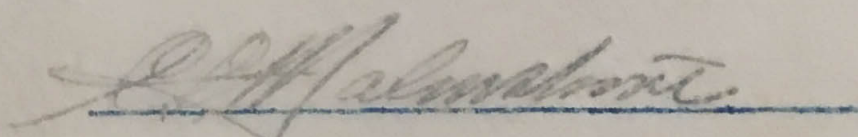
In response to your request of yesterday, I have the honor to submit the following figures with respect to the unrefined bullion on hand in this institution on this date:

	Gold, Fine ozs.	Silver, Fine ozs.
On hand, unrefined	469,102.717	2,859,887.29
Average monthly deposits	28,500.000	48,000.00
Bullion sent to Refinery per month, approx.	100,000.00	125,000.00
Sent to Refinery in excess of deposits received	71,500.000	77,000.00

Bullion will be sent to the Refinery at the present rate until about May 1st, at which time we start to shut down preparatory to the annual settlement.

From the foregoing it will be seen that the unrefined gold bullion on hand together with the estimated receipts for the next six months (based on the average for the past four months) will be sufficient to supply the Refinery during the remainder of the fiscal year.

Respectfully,



C. C. Malmstrom,
Acting Supt. M. & R. Dept.

THE MINT OF THE UNITED STATES AT DENVER,
MELTER AND REFINER'S DEPARTMENT.

November 12, 1925.

Hon. Frank E. Shepard,
Superintendent U. S. Mint,
Denver.

Sir:

Your communication of October 17th, in re Silver ingots was very interesting, but the figures surprised me, as I was under the impression that our work made a better showing; and this led me to examine the matter closely, but on a different basis, viz. - that of taking the average of all ingot melts of each mint for each year, using the figures as given in the Directors' reports.

Proceeding in this manner, I obtained the following results as to average fineness for the years indicated, viz.:

Exhibit No. 1.

	1921	1922	1923	1924	Average
Philadelphia	.8988	.8989	.8989	.8988	.8988
San Francisco	.8991	.8991	.8993	.8990	.8991
Denver	.8990	.8990	.8989	.8988	.8989

These figures show that the Philadelphia average is the lowest. Regarding the variation in fineness, I took the average of your figures in "Table B," which shows for the four years as follows:

Exhibit No. 2.

	High	Low	Dif. bet. H. & L.
Philadelphia	.9004	.8980	.0024
San Francisco	.9003	.8986	.0017
Denver	.8997	.8985	.0012

These figures show that in the average "High" Denver excels Philadelphia by seven points, and San Francisco by six points; and in the average "Low" Denver excels Philadelphia by five points and San Francisco excels Denver by one point.

The last paragraph on the first page of your letter states that "in 'High' results of fineness the Denver Mint is the lowest for the four years."

That statement is true and very much to our credit, as high ingot finenesses produce coin above standard, and cause a silver loss to the government. Our ingots have always made good coin, as shown by the annual reports of the Assay Commissions, but we try to prevent making them so rich as to cause a silver loss, which is a discredit.

THE MINT OF THE UNITED STATES AT DENVER,

MELTER AND REFINER'S DEPARTMENT.

Supt. - 2

I have noted the regular finenesses of the Philadelphia Mint as shown in your "Table A," but that is only one assay fineness, and of only a little more than one-third of the melts Philadelphia made; and there are many other assay finenesses ranging from .898 to .9005, a difference between high and low of 25 points, as compared with Denver's difference of 12 points. And in the matter of low ingots, I note further that in the years referred to the number of silver melts of a fineness of .8986 and under were as follows:

Exhibit No. 3.

	Philadelphia	San Francisco	Denver
1921	2,221	257	52
1922	3,162	919	45
1923	3,403	1,721	392
1924	<u>2,229</u>	<u>113</u>	<u>3</u>
Totals	11,015	3,010	492

And, calculated against the total number of ingot melts made, this shows that the percentages of all melts that were of a fineness of .8986 and under, omitting fractions, were as follows:

Philadelphia,	18%
San Francisco,	12%
Denver,	3%

And of the 492 Denver melts only 77 were of a fineness of .8985, which is the lowest fineness that our Assayer will pass; while the Philadelphia Mint had 10,310 melts .8985 fine, ~~2,229~~ 426 melts .89825 fine, and 279 melts .898 fine; which shows that in said years Philadelphia made into coin 705 melts that were under the fineness required by the regulations you quoted, and all of which would have been rejected in the Denver Mint, as being too low. Your quotation from the regulations is correct, but misleading, in this, that the mean variation of .8995 cannot possibly be used as a standard from which to manufacture silver ingots on account of the segregation of the metals.

It is the practice in coinage mints to make up silver ingot melts to a fineness of approximately .899, because, on account of the segregation which causes the copper to flow toward the outer edges, such ingots will produce coin of the standard fineness of .900, as the largest part of the coin is cut from the center or richest part of the ingot.

Thus, in making the ingots to the said fineness of .899, the regulations would allow us a leeway of only five points down, but

THE MINT OF THE UNITED STATES AT DENVER,

MELTER AND REFINER'S DEPARTMENT.

Supt. - 3

fifteen points up (from this .899), and as all "ups" cause an actual loss of silver, it theoretically confines us within the limits of the said five points down; and if we should fix upon .8987 fine as the low point for ingots, it would reduce our safe leeway to three points and as well would fail to comply with the aforementioned regulation.

During the present fiscal year we have made 121 melts of silver ingots; all of them were passed by the Assayer, and the average fineness is .8989 plus, the same as for last year which is one point above the Philadelphia average.

Over half of the melts that went down to .8987 in fineness were uncurrent coin melts, and that fact might easily have had something to do with the low fineness, because a very few counterfeit coins would not only reduce the fineness, but also cause the ingots to be less ductile.

I am very desirous that the Denver Mint should excel in these matters (and I think that it does), but after a careful consideration of the foregoing facts, I wonder if it would be wise to make any change in our present methods.

Respectfully submitted,

J. W. Milson

Jos. W. Milson, Supt. M. & R. Dept.

THE MINT OF THE UNITED STATES AT DENVER,
MELTER AND REFINER'S DEPARTMENT,

November 12, 1925.

Hon. Frank E. Shepard,
Superintendent U. S. Mint,
Denver.

Sir:

In re Emergency Defense:

Your announcements require the following weapons in the

M. & R. Department:

Office: 2 Rifles and 1 Revolver

On hand, 2 " " 3 "

Make-up Room: 1 Revolver

On hand, 1 " and 1 Rifle

Ingot Room: 2 Rifles and 2 Revolvers

On hand, 1 "

Refinery: 2 Rifles and 13 Revolvers

On hand, 1 "

This indicates that to bring this department up to its
quota will require 3 Rifles and 11 Revolvers.

Respectfully,

Jos. W. Milsom
Jos. W. Milsom, Supt. M. & R. Dept.

THE MINT OF THE UNITED STATES AT DENVER,
MELTER AND REFINER'S DEPARTMENT.

December 2, 1925.

Hon. Frank E. Shepard,
Superintendent U. S. Mint,
Denver, Colo.

Sir:

Mr. George N. Spencer entered the service of this institution in February, 1906, and ever since has been a loyal and efficient employee. For more than a dozen years he served as a melter, and was a very good one. For a long time he suffered with hernia of the abdominal viscera, and sometimes the affliction became very painful and troublesome while performing his duties as a melter, but he did not complain. He still wears a truss, but in his present employment the hernia is innocuous.

For more than four years last past, he has performed clerical duties in my office, and on August 1st, 1923, was regularly appointed as a clerk. His present duties require a degree of carefulness and accuracy not often found in clerical positions, particularly in the make-up of metals for ingot purposes, where mistakes would reduce our production by causing remelts which are expensive. When appointed as a clerk, his salary and bonus amounted to \$1840 per year, and at present it is only twenty dollars more -- \$1860. He has developed into an exceptionally good clerk, and is a clean, energetic man, always willing and ever loyal to the interests of the Denver Mint.

Considering the foregoing facts, I feel that his remuneration should be more nearly commensurate with his duties, and, by comparison, with the salaries of other clerks in this institution.

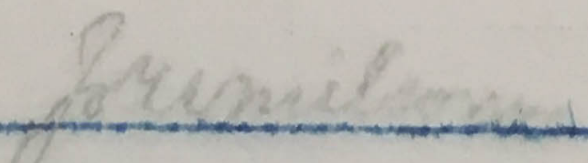
I therefore most earnestly recommend that you take the matter

THE MINT OF THE UNITED STATES AT DENVER,
MELTER AND REFINER'S DEPARTMENT,

Superintendent - 2

under consideration, pending an opportunity for such action as you
deem advisable.

Respectfully submitted,



Jos. W. Milsom, Supt. M. & R. Dept.

THE MINT OF THE UNITED STATES AT DENVER,
MELTER AND REFINER'S DEPARTMENT.

December 4, 1925.

Hon. Frank E. Shepard,
Superintendent U. S. Mint,
Denver, Colo.

Sir:

Mr. George N. Spencer entered the service of this institution in February, 1906, and ever since has been a loyal and efficient employee. For more than a dozen years he served as a melter, and was a very good one.

For more than four years last past, he has performed clerical duties in my office, and on August 1st, 1923, was regularly appointed as a clerk. His present duties require a degree of carefulness and accuracy not often found in clerical positions, particularly in the make-up of metals for ingot purposes, where mistakes would reduce our production by causing remelts which are expensive. When appointed as a clerk, his salary and bonus amounted to \$1840 per year, and at present it is only twenty dollars more -- \$1860. He has developed into an exceptionally good clerk, and is a clean, energetic man, always willing and ever loyal to the interests of the Denver Mint.

Considering the foregoing facts, I feel that his remuneration should be more nearly commensurate with his duties, and, by comparison, with the salaries of other clerks in this institution.

I therefore most earnestly recommend that you take the matter under consideration, pending an opportunity for such action as you deem advisable.

Respectfully,

Joe W. Wilson
Joe W. Wilson, Supt. M. & R. Dept.

THE MINT OF THE UNITED STATES AT DENVER,
MELTER AND REFINER'S DEPARTMENT.

December 4, 1925.

Hon. Frank E. Shepard,
Superintendent U. S. Mint,
Denver, Colo.

Sir:

We have concluded our tests on the Vesuvius crucibles, with the following results:

On October 30th we began using one of them in the Refinery melting room on Silver anodes. Four different melters used the crucible, and on November 20th, when taken out of the furnace, it was found to be cracked and a large piece of the bottom broke off, so that it was unfit for further use; but we had made 23 melts with it against a 12-melt average with our old crucibles on the same kind of material. The weight before using was 709.2 ounces; after 9 melts the weight was 712.5 ounces; and after 23 melts the weight was 691.4 ounces, thus showing a final loss of 17.80 ounces, or 2½%, as compared with a minimum of 17% with our old crucibles. The gain in weight after 9 melts was very unusual, and was caused in this way: Little hard nodules of what appeared to be silica exuded from the crucible all over the inside, and they absorbed metal which caused the increase in weight up to a certain point, after which they began to break off and float on the top of the metal. This crucible did not scale at any time, and the furnace was as clean at the end of a day's melting as it was at the beginning.

On November 2nd, we began using one of these crucibles in the Ingot melting room on Bronze melts. We had it in the fire eleven days and got 30 melts as against 15 with our old crucibles, with the same kind of material. We also used another of these crucibles in the Ingot room and secured 23 melts, but on the eighth day it cracked and caused a spill of the metal.

On the first day these crucibles are a little slower than our old crucibles, but after the first day they are about the same.

Respectfully submitted,

Jos. W. Milson
Jos. W. Milson, Supt. M. & R. Dept.

THE MINT OF THE UNITED STATES AT DENVER,
MELTER AND REFINER'S DEPARTMENT,

December 11, 1925.

Hon. Frank B. Shepard,
Superintendent U. S. Mint,
Denver.

Sir:

The testing of the Lava Crucibles has been concluded, with the following results:

They were delivered to the melting rooms on November 11th, and placed upon top of the furnaces for ten or twelve days, and then annealed according to our usual custom.

In the Ingot room we made eight melts of Bronze ingots, when a piece of the bottom broke away and it was chipped and broken around the top; so we discarded it.

In the Refinery melting room we met with much better success, and got twenty-one melts of Silver anodes with a loss in weight of 69.4 ounces, or twelve per cent.

The time consumed was approximately the same as with our old crucibles; they did not scale off at any stage, but the bottom is too large and causes trouble in dipping the last part of the metal; but that would be remedied when made to our specifications.

There was a substance resembling silica slag that fused out of the crucible and floated on top of the metal, and in this respect was similar to the Vesuvius crucible.

Respectfully submitted,


Jos. W. Milson, Supt. M. & R. Dept.

THE MINT OF THE UNITED STATES AT DENVER,
MELTER AND REFINER'S DEPARTMENT,

January 13, 1928.

Hon. Frank E. Shepard,
Superintendent U. S. Mint,
Denver.

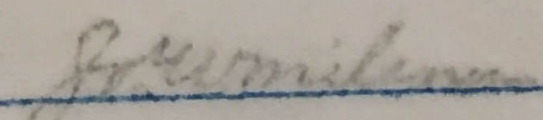
Sir:

The Dixon crucibles we are now testing are not of the size required by the specifications submitted to the company on which to base its bids. In making bronze ingot melts we had to reduce the regular number of ingots from three to four in each melt. In melting silver anodes we had to reduce the gross weight of each melt from 5300 ounces to 5000 ounces. As we cannot increase the number of melts, this difference would largely decrease our melting capacity in the Ingot room and Refinery.

The difference in dimensions follows:

	New Dixon Crucible	Specifications submitted
Top inside	9-7/8"	10-3/8"
" outside	12	12-1/2
Bilge inside	10-1/2	10-13/16
" outside	12-3/4	13
Depth inside	15-1/2	15-1/2
" outside	17	17
Base outside	8-1/4	8
Capacity, 4 gals. 3 qts.		5 gals. 1 qt. 1 pt.

Respectfully submitted,


Jos. W. Milson, Supt. M. & R. Dept.

THE MINT OF THE UNITED STATES AT DENVER,
MELTER AND REFINER'S DEPARTMENT.

January 20, 1926.

Hon. Frank E. Shepard,
Superintendent U. S. Mint,
Denver.

Sir:

We have concluded our test of the Dixon crucible.

In the Ingot room, we secured 23 melts of Bronze ingots, and the body of crucible is still good for probably 8 or 10 more melts; but because the diameter at the top is half an inch less than our old crucibles, the lid projects about one-fourth inch and that causes the crucible to burn and crumble off around the outside edge at the top until it almost breaks through to the inside, and that renders it unfit for further use.

In the Refinery, we made 35 melts of Silver anodes, and the crucible did not begin to scale until the 29th melt. It was much cleaner on the inside than either the Vesuvius or Lava; no slag floated on top of the metal from silica fusing out of the crucible as it did with both the Vesuvius and Lava makes. We had less trouble with burning off around the top because we made a ring from an old crucible; and while it fitted much better than our regular rings, it was not perfect, and so the danger point in use was reached when the top got too thin for safety. It was quite as fast as any we have ever used.

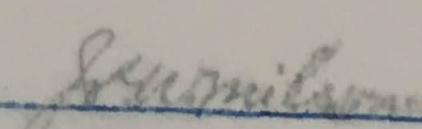
The only discouraging thing about the Dixon crucible is its failure to comply with our specifications which, as I set forth

THE MINT OF THE UNITED STATES AT DENVER,
MELTER AND REFINER'S DEPARTMENT.

Dixon crucibles - 2

in my letter of the 13th inst., is of such reduced capacity that in testing this crucible we had to reduce our silver anode melts from 5500 ounces to 5000 ounces; and with the latter there was not as much room for stirring as with the former. The same was true in Ingot melting when we had to reduce the Bronze ingot melts in like proportion.

Respectfully submitted,



Jos. W. Milson, Supt. M. & R. Dept.

THE MINT OF THE UNITED STATES AT DENVER,
MELTER AND REFINER'S DEPARTMENT.

January 21, 1926.

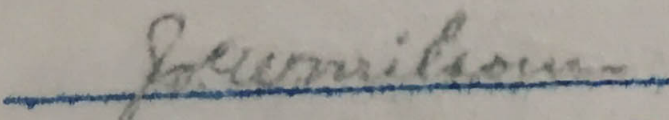
Hon. Frank E. Shepard,
Superintendent U. S. Mint,
Denver.

Sir:

I have carefully considered the results of all the tests we made on different crucibles, and find that we got the largest number of melts and best results from the Dixon. It was the cleanest, and as fast as any we have ever used.

I therefore recommend the purchase of the Dixon goods if made to our specifications.

Respectfully submitted,


Jos. W. Milsom, Supt. M. & R. Dept.

THE MINT OF THE UNITED STATES AT DENVER,
MELTER AND REFINER'S DEPARTMENT.

January 23, 1926.

Hon. Frank E. Shepard,
Superintendent U. S. Mint,
Denver.

Sir:

In some of the re-deposits shipped to this Mint from the Assay Offices, we are finding considerable iron, steel, and other infusible metals. In one silver anode melt we found nine separate pieces consisting of springs, screws, nails, and a foreign coin that would not melt. Quite a number of the melts made up, in part, from said re-deposits contain similar varieties but less in number, and many of them disclose much iron in the anodes after they have been partially dissolved in the electrolyte, as displayed to you yesterday in the Refinery.

We have always found a little of this infusible material in some re-deposits, but we have been getting so much of it lately, and as it charged to us in gold and silver at the bar finenesses, I deemed it proper to advise you of the facts. The only Assay Offices shipping to the Denver Mint are New Orleans and Helena.

Respectfully submitted,



Joe. W. Milsom, Supt. M. & R. Dept.

THE MINT OF THE UNITED STATES AT DENVER,
MELTER AND REFINER'S DEPARTMENT.

January 25, 1926.

Hon. Frank E. Shepard,
Superintendent U. S. Mint,
Denver.

Sir:

We have been using the flat cells and baskets made by the General Ceramic Co. for years, and they are very satisfactory. The cells are rarely injured in any way, but the baskets get broken occasionally, and that is why our order was for three cells and six baskets. Neither cell or basket can be used separately; they must go together, the basket fitting into the cell, and as we were using the Ceramic cells it was advisable to get the Ceramic baskets, so that there would be no question about their fitting properly into the cells we had in use.

About two years we purchased from Maurice A. Knight eight earthenware cells for use as filters, and upon receipt of them, five were condemned without use, and Knight replaced them with five others. Our experience with Knight earthenware goods has not been satisfactory; in fact, some of the original filters were so imperfect that the solutions gradually seeped through the body of the filter, which made them practically worthless for our work.

Under the conditions existing, and my knowledge of the quality of the goods of the respective bidders, I could not recommend the purchase of the Knight cells or baskets at any price.

Respectfully submitted,

Joe W. Milson

Joe. W. Milson, Supt. M. & R. Dept.

THE MINT OF THE UNITED STATES AT DENVER,
MELTER AND REFINER'S DEPARTMENT,

January 25, 1926.

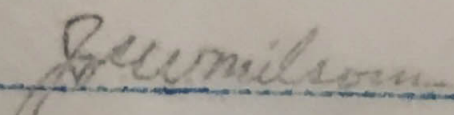
Hon. Frank E. Shepard,
Superintendent U. S. Mint,
Denver.

Sir:

We have been using the flat cells and baskets made by the General Ceramics Co. for years, and they are very satisfactory. The cells are rarely injured in any way, but the baskets get broken occasionally, and that is why our order was for three cells and six baskets. Neither cell or basket can be used separately; they must go together, the basket fitting into the cell, and as we were using the Ceramic cells it was advisable to get the Ceramic baskets, so that there would be no question about them fitting properly into the cells we had in use.

About two years ago we purchased from Maurice A. Knight eight earthenware cells for ~~use as~~ filters, and upon receipt of them, five were condemned without use. ~~Mr. Knight~~ Knight replaced them with five others. Our experience with Knight earthenware goods has not been satisfactory; in fact, some of the original filters were so imperfect that the solution gradually seeped through the body of the filter, which made them practically worthless for our work.

Respectfully submitted,


Joe W. Milson, Supt. M. & R. Dept.

THE MINT OF THE UNITED STATES AT DENVER,
MELTER AND REFINER'S DEPARTMENT.

January 28, 1926.

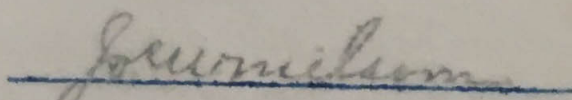
Hon. Frank E. Shepard,
Superintendent U. S. Mint,
Denver.

Sir:

On October 3, 1925, requisition was made for blank-books and forms, including six "Record of Ingot Melting," Form 184, a page of which is attached hereto.

Today, eight books, "Ingot Making Work Book," bearing the same form number, 184, were delivered to this department. The ruling on these books (see attached page) renders them wholly unfit for use by this department.

Respectfully,



Jos. W. Milsom, Supt. M. & R. Dept.

THE MINT OF THE UNITED STATES AT DENVER,
MELTER AND REFINER'S DEPARTMENT,

January 30, 1925.

Hon. Frank E. Shepard,
Superintendent U. S. Mint,
Denver.

Sir:

On October 30, 1925, this department was charged with 4,034 pounds of commercial Zinc, and after using 1,620 pounds, the balance, 2,414 pounds, was discarded as wholly unsuitable for use in making bronze ingots.

Said discarded zinc can be used in the Refinery, and I suggest that the 2,414 pounds be taken over by the General Department, and this department be given credit therefor; that the cost thereof be charged against the Contingent Fund, and that the Minor Coinage Profits Fund be reimbursed with the same amount.

Respectfully submitted,

Jos. W. Milsom

Jos. W. Milsom, Supt. M. & R. Dept.

THE MINT OF THE UNITED STATES AT DENVER,
MELTER AND REFINER'S DEPARTMENT.

January 30, 1936.

Hon. Frank E. Shepard,
Superintendent U. S. Mint,
Denver.

Sir:

Some time ago, your friend, Mr. Carl F. Moore, of the U. S. Smelting, Refining and Mining Company, informed you that said company was refining silver bullion containing small quantities of gold, quite successfully, and that he would furnish you with full details of the process at your request.

As we have large quantities of silver bullion on hand, and very little gold bullion, we cannot refine much of said silver with our present process; and so we are very anxious to secure all the information possible regarding methods of refining dore' bullion, and to that end I enclose herewith details of the information we should like to obtain from Mr. Moore.

Respectfully,

Joe W. Milson
Joe W. Milson, Supt. M. & R. Dept.

Information desired from Mr. Carl F. Moore, of the U. S. Smelting, Refining and Mining Co., as to the process used by said company in refining Silver bullion containing small quantities of gold.

Dimensions of flat cell?

Dimensions of basket?

Materials cells are made of, and if wood, what kind of wood, and approximate life of cell and basket?

Current density used on bottom of basket and also entire bottom of cell?

Electrical hook-up of cells and amount of voltage per cell?

Percentage of silver and also of nitric acid in electrolyte?

Does silver content of electrolyte increase during use, and, if so, how is the electrolyte depleted of its silver, and to what extent before precipitation, and what precipitant is used?

What is the composition of the candles used in the baskets and cells?

What kind of cloth or canvas is used to line baskets, and how many layers?

Is bullion put into baskets in the form of bars, slabs, or granules?

What is the percentage of Gold, Silver, and Base, respectively, in the unrefined bullion as it is put into the baskets, and what is the character of the base?

Any other information pertinent to the operations of said process?

THE MINT OF THE UNITED STATES AT DENVER,
MELTER AND REFINER'S DEPARTMENT,

February 18, 1926.

Hon. Frank E. Shepard,
Superintendent U. S. Mint,
Denver.

Sir:

Mr. George J. Borstadt, Jr., entered the service of this institution twenty years ago the first day of this month, and was then employed in the Refinery. Soon thereafter he recognized the fact that a knowledge of chemistry would be helpful in his work; so he took a thorough course along that line and finally equipped a laboratory at his home where he has studied and experimented for years, and with such success that in 1923 when our Refinery was not operating he was employed as an assayer in the New York Assay Office, which position he resigned to return here as foreman of our Refinery.

Mr. C. C. Malmstrom was my assistant and in general charge of the Refinery work until November 15, 1925, when he was promoted to the position of Assayer of this Mint, and since that time Mr. Borstadt has been in charge of Refinery operations, performing the duties of both positions, ^{and} during the three months that he has so been in charge he has made good in every way and secured splendid results.

As the position of "assistant" will remain vacant, and as Mr. Borstadt will continue to perform the duties of both positions, I recommend that his compensation be increased in a degree commensurate with his increased duties and responsibilities.

Respectfully submitted,

Jos. W. Milsom
Jos. W. Milsom, Supt. M. & R. Dept.

THE MINT OF THE UNITED STATES AT DENVER,
MELTER AND REFINER'S DEPARTMENT.

March 8, 1926.

Hon. Frank E. Shepard,
Superintendent U. S. Mint,
Denver.

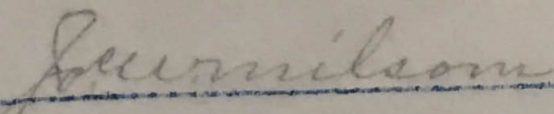
Sir:

The Engineering and Mining Journal-Press, under date of July 7, 1923, published a very interesting article on "An Improvement in Electrolytic Silver Refining," written by Hon. A. H. W. Cleave, Deputy Master, Royal Mint, Ottawa, Canada.

I am very desirous of obtaining full and complete information of all the details of said improvement, if that be possible, as it might materially assist in changes we contemplate for the particular purpose of refining silver bullion. At least we might obtain some new ideas that would help us in our work.

I enclose herewith a statement of the things we should like to know, and to which might be added any other information not specifically requested. Will you please obtain the facts for us?

Respectfully submitted,



Jos. W. Milson, Supt. M. & R. Dept.

In Re Silver Refining Circular Cells, Royal Mint, Ottawa, Canada

Information Desired:

Cells: Material, form, dimensions, capacity, where obtainable, and cost?

Bullion: Maximum and minimum content of Gold and Silver, and general character of Base?

Anodes: Size, number, and how grouped in cell to cause pulsating current, and total amount anode surface, and distance from cathodes?

Cathodes: Size, number, how placed, method of stripping, and amount of surface?

Electrolyte: Content of silver and acid at beginning, and degree of foulness to necessitate withdrawing from cell, and what is silver and acid content at that stage; is any effort made to reduce silver content of foul solution before or after removal from cell, but before precipitating the silver; method of precipitation of silver in foul solution, and is silver nitrate or free acid added occasionally to keep the electrolyte constant?

Electricity: Hook-up and current density?

Would like very much to obtain blue-prints and complete specifications together with any other information pertinent to silver refining.

THE MINT OF THE UNITED STATES AT DENVER,
MELTER AND REFINER'S DEPARTMENT,

March 18, 1926.

Hon. Frank E. Shepard,
Superintendent U. S. Mint,
Denver.

Sir:

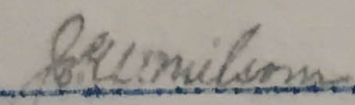
Advisement in response to your request under date of the 13th inst.:

This department is now producing ten melts of silver ingots daily which, the Coiner informs me, will be sufficient to make 31,000 silver dollars.

The Coiner now has on hand 58 bronze ingot melts, and has informed me that three melts will make 800 dollars; so he can run on bronze at the rate of three melts per day for three weeks, and on or before that time^I will make arrangements to produce the amount of bronze ingots required under your program for coinage.

I have made arrangements to finish the grinding, sampling, and sacking of sweeps this week.

Respectfully submitted,


Jos. W. Milsom, Supt. M. & R. Dept.

THE MINT OF THE UNITED STATES AT DENVER,
MELTER AND REFINER'S DEPARTMENT.

March 18, 1926.

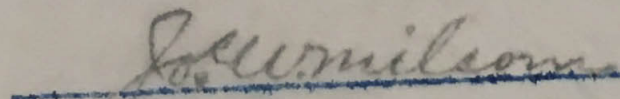
Hon. Frank E. Shepard,
Superintendent U. S. Mint,
Denver.

Sir:

Answering your communication of yesterday concerning silver
ingot finenesses:

My records show the average fineness, January 27 to March 13,
inclusive, to be .89894. The average of all Bureau reports fur-
nished me for the same period show on coin assays a fineness of
.89985. On the 12th inst. three melts dropped to .8986, and I
immediately increased the silver to such an extent that the last
26 melts, Nos. 279 to 304, inclusive, average .89923, and not one
of them was below .899.

Respectfully submitted,



John W. Milson, Supt. M. & R. Dept.

THE MINT OF THE UNITED STATES AT DENVER,
MELTER AND REFINER'S DEPARTMENT,

March 24, 1926.

Hon. Frank E. Shepard,
Superintendent U. S. Mint,
Denver.

Sir:

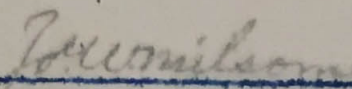
Responding to your request of yesterday, for information concerning the removal of tin oxide from silver anode sludge;

Our bullion contains such a small amount of tine that no special treatment has been necessary to secure its elimination. In the electrochemical process of refining silver, the gold, platinum, tin, and other metals that are insoluble in nitric acid go down as a sludge, and we melt this sludge and pour it into anodes for the gold cells; and in these cells the tin goes into solution and is eventually drawn off in the electrolyte. The last step in the treatment of the foul solution to recover the noble metals is boiling in a large tank with scrap iron, and this probably precipitates most of the tin in the tank slimes.

The slimes are sold to the smelters as "mint sweeps," and if the solution contains any unprecipitated tin, it passes to the sewer in the waste solution.

It is suggested that most of the tin in the "sludge" could be removed by melting it and working the melt with nitre.

Respectfully,



Jos. W. Milson, Supt. M. & R. Dept.

M. & R. Dept.

May 8, 1926.

Memorandum concerning Report on Special Assay Coins (Standard Silver Dollars), dated May 3, 1926; deliveries Nos. 14 and 15.

Delivery No. 14 consisted of coin out of 34 ingot melts (Nos. 490 to 523).

High and low finenesses of these melts, .8993 and .8986.

13 melts were at .899 or over; 21 melts were under .899.

The average fineness of these melts was .89896.

Delivery No. 15 consisted of coin out of 35 ingot melts (Nos. 445 to 452; and 524 to 550).

High and low finenesses of these melts, .8993 and .8986.

15 melts were at .899 or over; 20 melts were under .899.

The average fineness was .89889.

THE MINT OF THE UNITED STATES AT DENVER,
MELTER AND REFINER'S DEPARTMENT,

May 10, 1926.

Hon. Frank E. Shepard,
Superintendent U. S. Mint,
Denver, Colo.

Sir:

In Re Test Crucibles:

I was notified of the receipt of the Ross-Tacony test crucibles in February, but the closing down of the Refinery rendered it impossible to make the same kind of a test on these crucibles that we made on all others, and that was deemed necessary for any kind of comparative purposes.

After we start up the Refinery next August, we can make this test in the usual way, and that will be in ample time, so far as the Ross-Tacony Crucible Co. is concerned, as our present supply of crucibles is sufficient to keep us going for considerably more than a year.

Respectfully,

Jos. W. Milsom
Jos. W. Milsom, Supt. M. & R. Dept.

THE MINT OF THE UNITED STATES AT DENVER,
MELTER AND REFINER'S DEPARTMENT.

May 13, 1926.

Hon. Frank E. Shepard,
Superintendent U. S. Mint,
Denver, Colo.

Sir:

I have carefully considered your suggestion as to the probable necessity of reducing the number of employees after June 30th next.

The regular Ingot making crew consists of four men, and that number is irreducible.

When we start up the Refinery, after settlement, it will be for the purpose of refining silver bullion only, and the cutting out of the gold cells will enable us to reduce the regular day force; but the night shifts will have to be the same as when operating on both gold and silver. So to determine the number of employees necessary in this department, we begin with what we call the night force of six men, two of whom will always be on the day shift, together with a silver cell man and foreman of the melting room with one helper, making with the foreman of the Refinery, a complete crew of ten men as against fifteen a year ago.

Under this arrangement, it will be necessary for all cell men to assist in the melting room at the time of pouring and handling of molds.

We have at present six men who have been in the service in this mint less than two and a half years since the date of first employment, viz:

THE MINT OF THE UNITED STATES AT DENVER,
MELTER AND REFINER'S DEPARTMENT,

Superintendent - 2

R. M. Williamson	12- months.	Efficiency rating,	90
J. B. Hobson	24- "	" "	90
R. G. Russell (single)	27- "	" "	95
W. G. Boswell	25- "	" "	90
A. C. Eggert	25- "	" "	95
P. J. Kennon	27+ "	" "	95

And from these six, the three to be furloughed should be selected. These three with Hayes, recently transferred to the General department, makes a reduction of four workers from our regular day shift in the Refinery -- one in the cell room and three in the melting room.

Respectfully submitted,

J. W. Milson

Jos. W. Milson, Supt. M. & R. Dept.

THE MINT OF THE UNITED STATES AT DENVER,

MELTER AND REFINER'S DEPARTMENT,

June 30, 1928.

Messrs. F. H. Chaffin,
T. J. Quirk, and
Jos. Buford,
Settlement Commission.

Gentlemen:

The Melting and Refining Department of the Denver Mint closed its operations for the fiscal year 1928 with a Gold surplus of 96.257 fine ounces, and a Silver surplus of 917.64 fine ounces, as disclosed by your settlement of my accounts for said year.

The Refinery was in operation six months and produced 596,021.833 ounces of fine gold (every melt assaying .9999 fine), and 1,105,304.22 ounces of fine silver.

The Refinery clean-up disclosed a Gold surplus of 38.046 fine ozs. and a Silver wastage of 1,209.24 fine ounces. The gold surplus accrued from the fractional increases in weights and finenesses. The silver loss was operative wastage and less than half the amount of last year.

The Refinery returned in sweeps paid for in May of this year, Platinum, 28.19 ozs.; Palladium, 0.99 oz.; and 1,165 lbs. of Copper; and delivered in sponge to your commission 199.53 ozs. of Platinum, 19.47 ozs. of Palladium, and 1.33 ozs. of Iridium, making a total of 227.72 ozs. of Platinum, 20.46 ozs. of Palladium, 1.33 ozs. of Iridium, and 1,165 lbs. of Copper.

The Assayer returned a surplus of both metals: Gold, 1.205 ozs., and Silver, 17.80 ozs.

The Ingot room operated upon 667,349.492 ounces of Gold and 3,831,672.92 ounces of Silver; and returned a surplus in both metals: Gold, 48.521 ounces; and Silver, 2,264.04 ounces. The gold surplus was obtained from the gains on gold ingot work, and the silver surplus

THE MINT OF THE UNITED STATES AT DENVER,
MELTER AND REFINER'S DEPARTMENT,

Settlement Commission - 2

from gains on silver ingot work. The gold surplus amounted to one ounce in two hundred and fifty-six thousand dollars; and the silver surplus amounted to a gain of one ounce in each seventeen hundred ounces operated upon.

Gain on settlement mass melts: Gold, 8.553 ounces; Silver, 86.14 ounces.

Department earnings:

P. & R. charges collected on bullion, actually worked,	\$46,437.00
By-Products - - - - -	25,146.15
Gold Surplus - - - - -	1,989.80
Silver Surplus - - - - -	<u>614.81</u>
Total - - - - -	\$74,187.76

Respectfully submitted,

W. W. Milson

Jos. W. Milson, Supt. M. & R. Dept.

July 30, 1926.

Hon. F. E. Shepard,
Supt. U. S. Mint,
Denver, Colo.

Sir:

The letter of the Vesuvius Crucible Co., To the Director of the Mint, dated July 20th 1926, seems to be based largely upon erroneous information, said to have been obtained by its Salesman when he called at the Denver Mint.

I presented no facts that could in any way be construed as a basis for the comparative statements set forth in said, letter, which, inter alia, shows that three different kinds of metals were used in the tests, namely Silver, Bronze and Bronze ingots, when as a matter of fact all crucible tests made in this Mint are based upon only two kinds of metal, Silver Anodes and Bronze ingots, the former in the Refinery melting room and the latter in the Ingot Melting room.

Under date of Dec. 4, 1925, I made a complete official report on the tests of the Vesuvius crucibles received a short time previously and included in it a reference to the use of one of the crucibles received at an earlier date, which had not been mislaid but had not been tested.

A correct comparative statement of the tests as shown by my records is the following:

	Silver Anode Melts	Bronze Ingot Melts
Dixon	35	23
Vesuvius	23	30
Bartley	12	15

We also used another of these crucibles (the first lot), in the Ingot room and secured twenty-three melts, but on the eighth day it cracked and caused a spill of the metal. One of the questions asked in said letter "Is the exactly equal heat service on the two types of metal between ourselves and Joseph Dixon a coincidence, or does it mean that our pots were taken out on a predetermined schedule before they wore out or failed?"

Page 2. F. E. S.

is entirely gratuitous and unworthy of a representative company.

It might interest the Vesuvius Co. to know that its crucible tests were completed and official report made Dec. 4, 1925, and that the tests on the Dixon crucibles did not begin until after said date and were completed and official report made on January 20th 1926.

As to the statement "Further we expect to ask for a re-test at Denver Mint, and do not desire to antagonize them in any way", I want to state here that the Vesuvius Co. has not antagonized me by its unfair insinuations, but it might be well to postpone the re-test for a time as we have enough crucibles now on hand to last, I think, for at least two years.

I enclose herewith a copy of my official report of Dec. 4, 1925, covering the test of the Vesuvius crucibles.

Respectfully submitted,

Jos. W. Milson

Jos. W. Milson, Superintendent of
the Melting & Refining Dept.

JWS:McK

THE MINT OF THE UNITED STATES AT DENVER,
MELTER AND REFINER'S DEPARTMENT.

September 14, 1926.

Hon. Frank E. Shepard,
Superintendent U. S. Mint,
Denver.

Sir:

The items referred to in the letter of the Director of September 11th, are, Gold, 10.881; and Silver, 822.32, on the credit side of the Refinery account on form 900, for the fiscal year 1926. The word "coin" after "Bars" should have been deleted; as these items were not of coin fineness, but were as follows:

	Gold	Silver
Portion of Silver Settlement No. 1, redelivered to Refinery before Settlement; portion not redel'd,	8.178	699.31
Silver Settlement No. 24, in Mass No. 6 (departmental), and hence included in "Bars, un- parted," credit side of "Department proper"	1.648	119.17
silver Settlement No. 25, Do.	<u>1.055</u>	<u>3.84</u>
	10.881	822.32

Respectfully,

J. W. Milson

Jos. W. Milson, Supt. M. & R. Dept.

THE MINT OF THE UNITED STATES AT DENVER,

MELTER AND REFINER'S DEPARTMENT,

September 30, 1926.

Hon. Frank E. Shepard,
Superintendent U. S. Mint,
Denver.

Sir:

The amount and cost of Refining production for the years 1924, 1925, and 1926, are as follows:

Year	Fine ozs. Gold	Fine ozs. Silver	Total Fine ozs.	Total cost	Cost per 1000 ozs
1924	960,695.323	1,079,155.49	2,039,850.813	50,032.11	\$24.527
1925	974,668.699	1,457,069.57	2,431,738.269	50,705.03	20.851
1926	596,021.833	1,105,304.22	1,701,326.053	50,946.31	29.945

We commenced operations in the Refinery on August 5, 1925, in the usual way and so continued until October 10th, when we began experimenting with a different make-up of the Silver anodes. This was necessary because our supply of Gold bullion was getting low and most of it contained too much base to be used in the ordinary way. We made up two kinds of Silver anodes -- "Hard" anodes with 250 to 300 parts Gold and 100 parts base; and "Soft" anodes with 50 parts Gold and 100 parts base; and mixed them in the cells with the soft anodes predominating. This reduced the gold content of the Silver cells approximately one-half which caused a similar reduction in the Gold product; and this is clearly shown by a comparison with the previous fiscal year as follows:

Jan. '25	Gold,	109,074.845	Silver,	153,245.66
" '26	"	70,958.200	"	156,571.95
Feb. '25	"	107,969.876	"	159,082.41
" '26	"	71,081.327	"	133,524.97
Mar. '25	"	108,493.473	"	170,972.75
" '26	"	62,358.480	"	134,156.11

THE MINT OF THE UNITED STATES AT DENVER,
MELTER AND REFINER'S DEPARTMENT.

Superintendent - 2

Furthermore, the vacation, sick-leave, starting up and closing down expenses of the Refinery for 1925 fiscal year were charged against ten months' operations; and in fiscal 1926 these were charged against eight months' operations, which made quite a difference in the non-productive costs.

And, as we had only a small supply of Gold bullion on hand and a large amount of Silver bullion, I was informed that if the Refinery operated in fiscal 1927, it would necessarily have to work on the Silver bullion alone; so we did much experimenting along the line of Silver refining with satisfactory results, but it likewise reduced our output of fine metal.

Respectfully submitted,

Jos. W. Milson

Jos. W. Milson, Supt. M. & R. Dept.

THE MINT OF THE UNITED STATES AT DENVER.

MELTER AND REFINER'S DEPARTMENT.

October 5, 1926.

Hon. Frank E. Shepard,
Superintendent U. S. Mint,
Denver.

Sir:

The hood tile required in this department are used for lining the hoods on top of the furnaces with a heavy fire clay tile, which must be closely fitted so as to force the hot blast from the top of the furnace into the settling chamber, thus keeping it out of the melting room and preventing it from interfering with the work of the melters. It requires three tile to line a hood: one top, one left side, and one right side, designated A, B, and C.

The B and C tile are set perpendicularly in each side of the hood and are rabbeted on the bottom to fit the hood and hold them in place, and rabbeted on the top to fit tile A which lies horizontally with the ends resting in the rabbet on the top of tiles B and C.

The last lot of these tile, purchased about two months ago, fit into the hoods very nicely and slip into place without any preparatory fitting, but the old lot that we used previously had to be chipped off considerably before they could be put into place, which required quite a lot of work, and it had to be done very carefully so as not to break the slab. The old lot was purchased from the Denver Fire Clay Co., and did not conform, even closely, to the specifications prepared by this department; so the transfer of this work to another company that has furnished us with the tile we are now using, is very advantageous in our work and therefore must be economical.

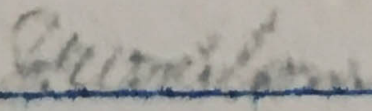
It is my opinion that the full set of three tile should always

THE MINT OF THE UNITED STATES AT DENVER,
MELTER AND REFINER'S DEPARTMENT,

Superintendent - 2 .

be made by the same factory, because that will certainly have a
tendency to make a better fitting product.

Respectfully submitted,



Jos. W. Milson, Supt. M. & R. Dept.

THE MINT OF THE UNITED STATES AT DENVER,
MELTER AND REFINER'S DEPARTMENT,

November 8, 1926.

Hon. Frank E. Shepard,
Superintendent U. S. Mint,
Denver.

Sir:

On July 30, 1926, in response to the Director's letter of July 20th, I enlarged my report of December 4, 1925, regarding the tests of the Vesuvius crucibles shipped us in August, 1925; and said, inter alia, "it might be well to postpone the re-test for a time as we have enough crucibles now on hand to last, I think, for at least two years."

All crucible tests are based upon melting Silver anodes and Bronze ingots, and as the Refinery has not been operating we could not make the silver anode test, and so the two crucibles shipped us in November, 1925, have not yet been tested.

Respectfully submitted,

Jos. W. Milson, Supt. M. & R. Dept.

November 12, 1926.

Hon. Frank E. Shepard,
Superintendent U. S. Mint,
Denver.

Sir:

I hereby present the following reference to receipts of Gold Bullion in this institution:

	Troy ozs.
Average receipts for last five years	424,802.009
" "Homestake" product, last 2 years	<u>296,355.913</u>
" Total annual receipts	721,157.922
" " monthly "	60,096.493
Unrefined bullion on hand, Nov. 1, 1926,	441,969.161
Add 3 months' average receipts	<u>120,192.986</u>
On hand Jan. 1, 1927 (approx.)	562,162.147
Add 6 months' average receipts	<u>360,578.958</u>
On hand July 1, 1927 (approx.)	922,741.105

The Refinery will refine slightly in excess of 100,000 ozs. per month as against receipts of about 60,000 ozs.

Respectfully,

Joseph W. Milson

Jos. W. Milson, Supt, M. & R. Dept.

November 22, 1926.

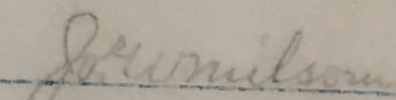
Hon. Frank E. Shepard,
Superintendent U. S. Mint,
Denver.

Sir:

The amount of silver in unrefined gold and silver bullion in the Melting and Refining department on October 31st, 1926, was 2,539,388.54 fine ounces, of which approximately 2,294,520.45 fine ounces is in bullion suitable for refining for the silver content only. With our present equipment we believe we can produce between 130,000 and 150,000 ounces of fine silver each month.

This excess of silver bullion accrued from two sources, the Tintic of Utah which ceased shipping here three and a half years ago; and the Mogollon of New Mexico which has quit operating. The last shipment reached here about nine months ago. So both of those sources, the only large ones this mint ever had, are closed to us; and if we use this bullion in silver refining, it will be necessary, when we return to refining both gold and silver, to make up our silver anodes with refinery fine silver, as our present receipt of silver bullion is negligible.

Respectfully,



Jos. W. Milson, Supt. M. & R. Dept.

Mint of the United States at Denver
Melting and Refining Dept.

December 8, 1926.

Hon. Frank E. Shepard,
Superintendent U. S. Mint,
Denver.

Sir:

Your communication of the 7th inst. regarding ingots, suggested calling your attention to what the Director's reports show, touching that subject, for the last ten years. "The percentage good coin produced to ingots operated upon" -- follows:

Year	Philadelphia				San Francisco				Denver			
	Gold	Silver	Nickel	Bronze	Gold	Silver	Nickel	Bronze	Gold	Silver	Nickel	Bronze
1916:	43.59	55.00	53.30	56.35	53.32	62.06	65.37	67.36	0	67.93	68.88	75.20
7	55.77	54.95	53.75	61.02	83.40	61.12	64.66	65.08	0	67.46	70.10	71.45
8	0	57.38	58.68	68.84	0	60.36	63.95	64.15	0	67.42	70.11	74.31
9	0	56.01	60.61	58.61	0	63.05	63.48	63.09	0	65.13	71.23	70.41
1920	29.06	50.45	49.83	62.79	50.48	58.69	62.35	63.06	0	62.68	72.86	72.04
1	0	48.43	77.58	55.32	0	52.31	60.96	62.97	0	57.07	72.28	0
2	32.40	51.47	0	0	45.18	52.06	0	0	68.15	57.74	0	0
3	33.49	53.69	0	0	49.26	53.07	0	0	69.25	60.40	70.49	0
4	39.86	56.15	56.33	54.31	49.50	61.04	61.23	63.28	69.45	63.13	69.35	70.95
5	38.95	57.17	59.33	64.18	54.03	64.81	65.13	66.09		65.22		

As the quality of the ingots very largely controls the quantity of good coin produced, a comparison of percentages is very interesting.

Respectfully,

Joe W. Wilson
Joe. W. Wilson, Supt. M. & R. Dept.

December 21, 1936.

Hon. Frank A. Shepard,
Superintendent U. S. Mint,
Denver.

Sir:

The following arrangement presents a tentative distribution of the ten men necessary to operate the Refinery on the silver bullion:

Foreman,	Borstadt
Silver cell man,	Baskind
Night helpers,	Arnold
	Eggert
	Boswell
	Dardis
	Hobson
	McClung
Foreman melting room,	Welsh
Melter,	Wilcox

The two night helpers, as they come on the day-shift will help in the melting room, as four men are necessary to handle each melt. This leaves Borstadt and Baskind to do the cell work, washing of product, handling and care of solutions, etc., with such assistance as may be obtained from the helpers in the melting room between melts.

Respectfully submitted,

Jos. W. Milson

Jos. W. Milson, Supt. M. & A. Dept.

December 21, 1926.

Hon. Frank E. Shepard,
Superintendent U. S. Mint,
Denver.

Sir:

The following equipment will be required in connection with the starting up of the Refinery, and should be furnished as soon as convenient:

One conical wood filter, as per requisition recently issued, and

Two circular depleting cells

It will also be necessary to have the bus bars on the silver cells drilled and tapped in new places, as in the silver work it is necessary to set the anodes and cathodes farther apart than in regular work as in the past.

Respectfully submitted,

Jos. E. Milson

Jos. E. Milson, Supt. M. & R. Dept.

M. & R. Dept.

January 26, 1927.

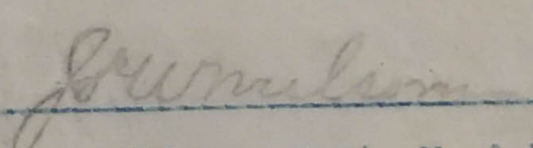
Hon. Frank E. Shepard,
Superintendent U. S. Mint,
Denver.

Sir:

We received our last shipment of minor coinage copper from The Metal Sales Corporation early in October, 1926, and I was informed that the amount checked in did not agree with the amount said to have been shipped; and I was requested to keep an accurate account of the use of said copper so that we could determine exactly the amount received in the shipment.

I finished the use of said copper yesterday. I brought up sixty-eight truck-loads that aggregated 159,460 lbs. and sweeps to the amount of 413 lbs. Each truck-load was carefully weighed, the weight of the truck deducted and the net weight recorded each day. I have used all the copper received in said shipment, and the total amount that I have received is 159,873 lbs.

Respectfully submitted,


Jos. W. Milson, Supt. M. & R. Dept.

February 2, 1937.

M. & R. Dept.,

Hon. Frank E. Shepard,
Superintendent U. S. Mint,
Denver.

Sir:

Our present operations in the Refinery are confined to the parting and refining of silver bullion. When we are also operating the gold side, the silver anodes contain approximately 360 parts of gold in the thousand, and they retain their original form even after the extraction of most of the silver in the cell, and they are then melted into anodes for the gold cells with a fineness of close to 900 parts gold.

In our present work of silver refining the gold content of the silver anodes is about 12 points in a thousand, and it is freed from the anode in very finely divided particles and goes down in the bottom of the sacks as an almost impalpable slime which runs less than 400 parts gold, and it is difficult to hold all of it in the sacks. In fact we cannot do so with the sacks we are now using. This morning we received the official assays on the first lot of bottom silver, three melts, and they showed a gold content of, respectively, .00004, .00005, and .00002. To correct this condition as soon as possible, I earnestly recommend that six thousand anode sacks be procured, and that they be made of a little heavier material and of a finer texture than the ones we are now using.

Respectfully,

J. W. Milson
Jos. W. Milson, Supt. M. & R. Dept.

M. & R. Dept.

March 4, 1927.

Hon. Frank E. Shepard,
Superintendent U. S. Mint,
Denver.

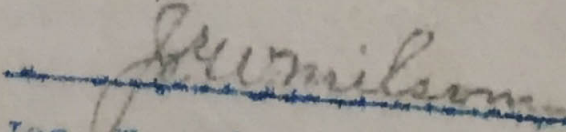
Sir:

Two years ago yesterday I applied for an extension of my retirement age, and upon your recommendation the application was approved and the extension granted for two years.

Since that time I have passed through two annual settlements, and the records for these two years disclose that I returned to you a surplus in gold and silver of \$10,361.61, by-products of a value of \$69,271.87, and that the R. & R. charges collected on bullion operated in the Refinery amounted to \$117,898.59.

As my health is good and I desire to continue in the service, I hereby submit this my formal application for another extension for a term of two years.

Respectfully,


Jos. W. Milson, Supt. M. & R. Dept.

THE MINT OF THE UNITED STATES AT DENVER,
MELTER AND REFINER'S DEPARTMENT.



The above is a rough sketch of the filter desired for the Refinery:

The diameter across the top inside is 32 inches.

The diameter across the bottom inside is 20 inches; and

The depth inside is 20 inches.

The top of the rim around the inside of the filter is three inches from the bottom; and the top face of the rim is flat and one and one-half inches wide.

The outlet is one and one-fourth inches in diameter at the inside of the filter and one and five-eighths inches diameter at the outside for use with rubber cork.

W. W. Milson
Jos. W. Milson, Supt. M & R. Dept.

U.S.Mint, Denver, 3/19/27.

Estimated cost per ton to reduce platinum sweeps by sweating:

80 Sweats:

32 Crucibles,	at \$7.50	\$240.00	
1040 lbs. Borax	" .15	161.20	
720 " Soda	" .03	27.00	
Melter, 27 days	" 5.80	<u>156.60</u>	\$584.80

Melting kings into anodes:

2 melters	at \$5.80	11.60	
3 helpers	" 5.35	16.05	
3 crucibles	" 7.50	<u>22.50</u>	50.15

Copper cell treatment:

Acids		34.50	
Electricity		37.80	
Helper, 4 days	at \$5.35	<u>21.40</u>	93.70

Sweating copper cell sludge:

2 crucibles	at \$7.50	15.00	
Melter, 2 days	" 5.80	<u>11.60</u>	26.60

Fuel oil, 945 gals. 82.69

Total \$837.94

The resulting sludge kings must be made up with deposit bullion into silver anodes and pass through the silver cells and the black gold derived therefrom melted into gold anodes and pass through the gold cells, and the platinum and palladium is precipitated from the foul gold cell solutions, and these slimes from the precipitation are then sweated and the resulting kings melted into gold cell anodes, which are used in one gold cell only; and it is the foul solution from this one cell that gives us the platinum family of metals.

Jos. W. Milson
 Jos. W. Milson, Supt. M. & R, Dept.

U. S. Mint, Denver, Colo.
 March 24, 1927.

M. & R. Dept.

April 4, 1927.

Hon. Frank E. Shepard,
Superintendent U. S. Mint,
Denver.

Sir:

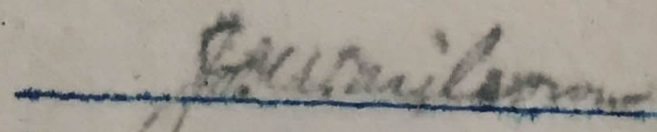
In the proposals you sent out on March 9th was, inter alia,
the following item:

- "4 Conical pots or filters with outlet and rim for
"false bottom.
- "Inside dimensions: Top diam. 32", bottom diam. 20"
"and depth 20".
- "Capacity approximately 45 gallons."

The top of the rim around the inside of the filter, to support
the false bottom, is three inches above the inside bottom of
the filter, and the top face of the rim is flat and one and
one-half inches wide.

The outlet is one and one-half inches in diameter at the
inside of the filter and one and five-eighths inches diameter
at the outside, for use with rubber cork.

Respectfully,


Jos. W. Milson, Supt. M. & R. Dept.

M. & R. Dept.

May 10, 1927.

Hon. Frank E. Shepard,
Superintendent U. S. Mint,
Denver.

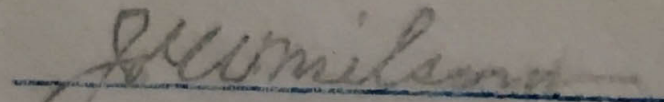
Sir:

We have concluded our tests on the Vesuvius crucibles,
with the following results:

Ingot room, Bronze ingots: We made the first melts
on February 26th and the last on March 9th. The crucible
commenced to break a little at the top on the seventeenth melt,
but was used safely until we had secured twenty-five melts.

Refinery, Silver anodes: In the refinery we secured
fifty-six melts of silver anodes, with a loss in the weight
of crucible of twelve per cent. It did not scale at any
time, but there was a slight tendency of slag to fuse out
of inside of crucible and float on surface of metal, not
enough, however, to become troublesome.

Respectfully submitted,


J. W. Milson, Supt. M. & R. Dept.

June 30, 1927.

M. & R. Dept.

Messrs. F. H. Chaffin,
R. H. Moffett, and
A. C. Probey,
Settlement Commission.

Gentlemen:

The Melting and Refining Department of the Denver Mint closed its accounts for the fiscal year 1927 ending this day, with a gold surplus of 129.701 fine ounces, and a silver surplus of 1370.52 fine ounces, as evidenced by your check of our work for the year. The said gains were obtained from the following sources:

Refinery,	Gold,	79.281	ozs.	Silver,	77.71	ozs.
Ingot room,	"	8.569	"	"	850.13	"
Assayer,	"	.000	"	"	4.57	"
Dept., general,	"	42.166	"	"	438.11	"
Total	"	130.016	"	"	1370.52	"
Assayer's gold loss		.315	"			
M. & R. Net gain		129.701	"		1370.52	"

The Refinery was in operation only four and a half months, and produced 867,959.56 ounces of fine silver. The work was confined exclusively to the parting of Dore bullion in vertical cells, which was a new proceeding in this mint; the anodes contained 10 to 15 parts gold and about 900 parts silver. We operated flat cells for depleting the base, solutions and this enabled us to use a quantity of base bullion (600 to 700 parts base), and therefrom accrued the small gains that usually accompany the treatment of very base bullion; and that, together with the fractional gains in weight and fineness, constituted the sources of the Refinery surplus in gold. The silver surplus of the Refinery was unusual, and I think it is largely accounted for by the fact that the composition of the anodes caused a constant increase in the silver nitrate in the cells and almost did away with the making of silver nitrate in the nitrate hood and thus saved us from the usual loss of silver in the fumes that pass out of the nitrate hood.

The Ingot room melted only eight melts of gold during the year, and its gold surplus was recovered from the clean-up of flues and furnaces. The Ingot room produced 2,919,686.66 standard ounces of silver ingots during the year, and its surplus of 944.58 ounces (standard) shows a gain of approximately three-tenths of an ounce to the thousand.

Settlement Commission -- 2

The Assayer's account was normal.

The department gain on mass melts for the year was 21.022 ounces gold and 397.99 ounces silver, and the balance was obtained from various sources, such as grains, truck and floor sweeps, etc.

Respectfully submitted,

Jos. W. Milson
Jos. W. Milson, Supt. M. & R. Dept.

July 8, 1927.

M. & R. Dept.

Hon. Frank E. Shepard,
Superintendent U. S. Mint,
Denver.

Sir:

I am returning herewith the proposed blanks and records for the M. & R. department, together with the letter of instructions about the same. These have been carefully considered by our office force.

The following forms are considered acceptable without change:

C ^x	Samples and grains detail record
E	Mass melting record
413	Record of miscellaneous bullion
869 B	Melting record refined bullion
889	Transactions and balances M. & R. Dept.
899	Bullion invoice
929	Make-up sheet
980 B	Bar delivery voucher
700	Sweeps record

Following is a transcript of the notations attached to the respective forms concerning which it was deemed advisable to make suggestions or ask questions:

Form 829-A Ingot melting report, gold and silver.
We have never used this form.

Form 829 B Ingot melting report, nickel and bronze.
We have never used this form.

Form 867 Receipts and deliveries of ingots and clippings.
We have never used this form. Should it not be prepared in triplicate? One for receiving officer, one for delivering officer, and one for superintendent's representative.

Form 740 Gold and silver custody account, M. & R. Dept.
Will this form used daily do away with Form 168 (Receipts and deliveries of Gold bullion), and a similar form, No. 183, for silver bullion? There is no mention of these latter forms in the proposed plan.

Form 963

Deposits delivered to Supt. M. & R. Dept.

This form considered OK.

Present practice is for M. & R. clerk to block out this form and make entries of weights of bars, samples, and grains, in the weigh clerk's room when receiving bullion from him. All weights are first written in pencil and not made final in ink until assayer's certificate of weight and fineness is given to M. & R.

Would not this practice be a virtual following of the procedure suggested in the new plan?

Under present practice there are no plus or minus items on weights, for the after-melting weight is noted in pencil at the time by the M. & R. representative, thus making simultaneous transaction of weight-finding and delivery by weight clerk.

Form C

M. & R. Dept. account with Assay Dept.

This form considered OK, except that it would be well to add a column showing final disposition of credit items.

Form 867 x

M. & R. Dept. Assay samples identification.

Blank calls for weight of sample. Is it intended that M. & R. Dept. is to weigh samples before sending them to assayer? As now done, foreman takes samples to assayer, weighs them, and retains memo. of weight in Form 1047.

Form 869

vs

Refinery account.

Form 869 A

We prefer Form 869, because the classification of each melt (as provided by Form 869 A) would be difficult and productive of errors. It would be comparatively simple and tending to greater accuracy to recap. the refinery items from Form 963 and other sources. The great bulk of items for the refinery is from the "deposit register" (Form 963) where its classification-character appears.

Form 1052 A and 1052

M. & R. Dept. melting report.

Melting room foreman keeps these records in Forms 1044 and 1047 (blank books) blocked for the purpose.

Forms 909, 911, and 912

Records of ingot making.

We take the liberty of attaching hereto a form of our own, for making a record of ingot melting, and which we have used with splendid results for many years. By making a recap. of monthly totals, we have a fine annual statement of the ingot room results.

Form 184 A Ingot making work book.

This record contemplates the weighing out with each ingot melt of the tops, and clips that are to enter into the melt; also that the tops of each melt are to be weighed back. Also that the melting loss on each melt is to be ascertained. This latter would necessitate drawing the crucible after each melt and thus very materially slowing down the work. Our practice is to leave the placing of the tops, clips, etc., of the day's melting to the foreman of the ingot room. Care is taken beforehand to send out only enough tops, clips, etc., to make up the required amount for the day's run. For example, in making six melts of silver ingots in a day, requiring approximately 25,000 ounces of metal, if the silver bars and alloy copper amount to 16,500 ounces, only 8,500 ounces of tops, clips, etc., would be sent out in addition thereto.

Uncurrent coin is sent to the ingot room, usually 1000 or 2000 ounces to the melt, each lot in a separate box which is numbered to correspond with the melt number painted on the bars and alloy.

The tops are put into the succeeding melts as required, thus leaving at the close of the day only one lot of tops to be weighed back, and thus requiring the drawing of the crucible only once -- at the close of the day. By this method we ascertain the total melting loss of the day, but not of each melt, except by average. our

We do not keep any record of standard ounces, since all accounts are in fine ounces. Gross weights are carefully ^{noted}, however, to discover melting room gains and losses.

Usually the bars in any one melt are of the same fineness. Frequently a day's run of bars is of the same fineness; so that the fine ounces for the day as concerns this item can be determined at once.

When standard bars, uncurrent coin, or miscellaneous mint metal is used in the make-up in addition to the fine bars, of course the necessary calculations are made to cover the ingot requirements.

We use the small blank book, Form 1047, for our brief preparatory ingot make-up work, and transfer this record to Form 184 A, if silver, or to 184, if gold.

We use the blank book, Form 1044, as a constant memo. for carrying gross weights of the various metals delivered to and returned from the ingot melting room, with the resulting gross losses or gains in the operations. These figures are also transferred to Forms 184 A or 184, if silver or gold.

Forms 900 A-B-C-D Operations of M. & R. Dept.

Final results of work as they would appear on these forms would be affected by suggestions attached to the daily, monthly, and incidental forms, as submitted.

Respectfully,

J. H. Milson
Supt. M. & R. Dept.

M. & R. Dept.

July 28, 1927.

Hon. Frank E. Shepard,
Superintendent U. S. Mint,
Denver, Colo.

Sir:

William M. Bush, Foreman of the Ingot melting room, is so sick that he cannot return to work, and has applied for annuity to begin August first, thus severing his connection with the service on the last day of this month.

Samuel R. Whitaker entered the service of the Denver Mint on May 7, 1906, and on October 6, 1913, was promoted to the position of a melter. During rush work on October 28, 1921, he was appointed Night Foreman of the Ingot room, and on September 1, 1922, he was appointed Assistant Foreman, to serve during the rush work; and, the emergency having passed, on April 1, 1923, he resumed his position of melter.

He has always done his work well, is loyal to the Denver Mint, has had considerable experience in this particular work, is highly recommended by the present foreman, and is fully competent to fill the said position which will become vacant next Monday.

I therefore most earnestly recommend that said Samuel R. Whitaker be appointed Foreman of the Ingot melting room of the Denver Mint, to take effect upon such convenient date as you may determine.

Respectfully submitted,


Jos. W. Milson, Supt. M. & R. Dept.

M. & R. Dept.

August 24, 1927.

Hon. Frank E. Shepard,
Superintendent U. S. Mint,
Denver, Colo.

Sir:

On July 28th I recommended the appointment of Samuel R. Whitaker as Foreman of the Ingot melting room, and since August 5th he has performed all the duties of said position. His work has been good and I have carefully noted his relations with the men under him, and they seem to be very satisfactory; and I now recommend that he be regularly appointed as such Foreman, to take effect September 1st, 1927, and that his compensation be increased to \$7.25 per day, which is the customary pay for said position.

Respectfully submitted,


Jos. W. Milsom, Supt. M. & R. Dept.

October 14, 1927.

Hon. Frank E. Shepard, Supt.
U. S. Mint,
Denver, Colo.

Sir:

It is absolutely necessary to protect the men in the Ingot Room who work on the emery wheels, from injury to their eyes from flying particles of metal, and I therefore recommend that six eye-guards be purchased for that purpose.

Respectfully,

J. W. Milson
Jos. W. Milson, Supt. M. & R. Dept.

M. & R. Dept.

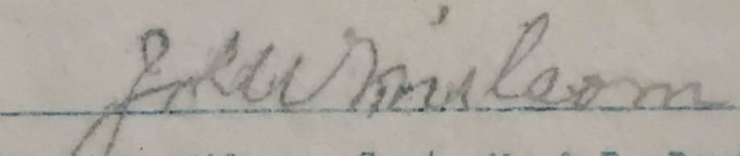
November 8, 1927.

Hon. Frank E. Shepard,
Superintendent U. S. Mint,
Denver, Colo.

Sir:

This department is in need of certain porcelain goods which should be procured at the earliest time convenient. The filter vessels and the jars now on hand are of the desired original equipment purchased many years ago, and the covers are entirely new and very necessary in the economical handling of gold chloride. I enclose specifications.

Respectfully submitted,



Jos. W. Milsom, Supt. M. & R. Dept.

M. & R. Dept.

November 8, 1927.

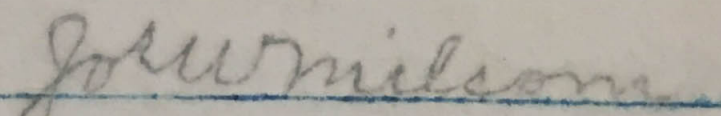
Mr. H. D. Coleman,
Superintendent M. & R. Dept.,
U. S. Mint, Philadelphia.

Dear Sir:

I have a letter written many years ago by the late Dr. Tuttle of your Mint, on the treatment of Nickel and Bronze ingots and scrap. He said he used silicon copper or manganese copper -- probably the former -- and I should be pleased to know your present method, what you use, and the amount, etc.

With kindest regards and the hope that everything is well with you, I remain,

Sincerely yours,


Jos. W. Milson, Supt. M. & R. Dept.

P.S.

Please present my regards to Mr. Chaffin.

JWM

M. & R. Dept.

November 23, 1927.

Hon. Frank E. Shepard,
Superintendent U. S. Mint,
Denver, Colo.

Sir:

I have carefully examined the bids for Refinery supplies, and find that only one of the bidders has bid on the kind of ware called for in the specifications submitted to them.

One of the bidders, Maurice A. Knight, seems to make an unlimited guarantee on his chemical stoneware, but our experience with his goods has been far from satisfactory. Several years ago we purchased from him eight rectangular tanks, and upon receipt we condemned five of them, which he replaced with five others. These did not have the cracks of the ones we condemned, but were so porous as to be dangerous for use with any gold solutions.

Several years ago the Melter and Refiner of the San Francisco Mint told me that his Refinery clean-up disclosed a considerable gold loss, and in trying to find the cause he thought of some chemical stoneware tanks that he had been trying out in his gold operations. So he broke up one of them and secured about eighty ounces of gold from it. Then he broke up another and turned his wastage into a small surplus. This agrees with our experience, as we have never found any kind of stoneware that appeared to be safe in the handling of gold chloride or resulting solutions.

The porcelain equipment we now use is part of the original Refinery equipment -- it is everlasting except for breakage, and on that account is the most economical ware that can be procured for gold operations.

If this contract is given to the Coors Company of Golden, we can reduce the amount of the order to that which we require for immediate use, to wit, two filters, two jars, and five covers; because, being close here we can obtain others without delay, when necessary.

I therefore earnestly recommend that the contract be awarded to the Coors Porcelain Company for two filters, two jars, and five covers.

Respectfully,

John W. Milsom
Jos. W. Milsom, Supt. M. & R. Dept.

M. & R. Dept.

November 23, 1927.

Hon. Frank E. Shepard,
Superintendent U. S. Mint,
Denver, Colo.

Sir:

I have carefully examined the bids for Refinery supplies, and find that only one of the bidders has bid on white porcelain, the kind of ware called for in the specifications submitted to them.

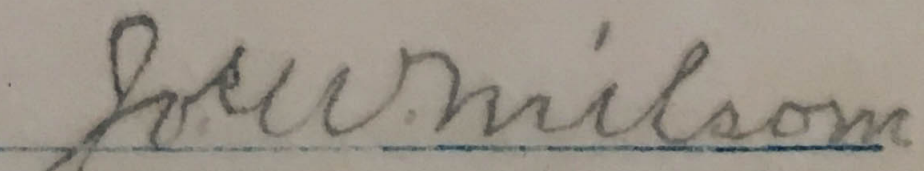
One of the bidders, Maurice A. Knight, seems to make an unlimited guarantee on his chemical stoneware, but our experience with his goods (and that of all other American factories) has been far from satisfactory in handling gold solutions. Several years ago we purchased from him eight rectangular tanks, and upon receipt we condemned five of them, which he replaced with five others. These did not have the cracks of the ones we condemned, but were so porous as to be dangerous for use with any gold solutions.

Some years ago the Melter and Refiner of the San Francisco Mint told me that his Refinery clean-up disclosed a considerable gold loss, and in trying to find the cause he thought of some chemical stoneware tanks that he had been trying out in the gold operations. So he broke up one of them and secured about eighty ounces of gold from it. Then he broke up another and turned his wastage into a small surplus. This agrees with our experience, as we have never found any kind of stoneware that appeared to be safe in the handling of gold chloride or resulting solutions.

All of the porcelain ware we now use is part of the original Refinery equipment, and all of it is Royal Berlin porcelain, made in Germany. It is everlasting except for breakage, and on that account is the most economical ware that can be procured for gold operations.

I therefore earnestly recommend that the contract be awarded to the Coors Porcelain Company, of Golden, Colo.

Respectfully,



Jos. W. Nilson, Supt. M. & R. Dept.

December 10, 1927.

Mr. Herbert D. Coleman,
Supt. M. & R. Department,
U. S. Mint, Philadelphia.

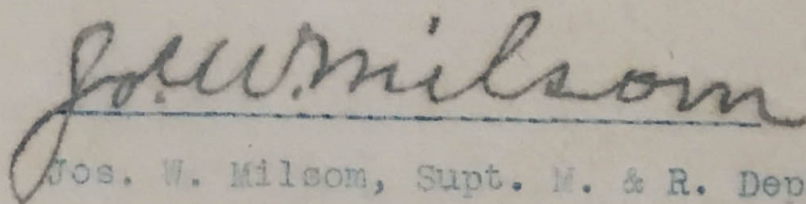
Dear Mr. Coleman:

Your very interesting letter gives me valuable information that I was in need of, and I earnestly thank you for your prompt kindness in the matter.

I have been informed here that the amount of phosphorus in phosphor-copper may vary; so I should appreciate your informing me of the percentage of phosphorus in the phosphor-copper you use.

Again thanking you, and hoping that the coming holidays may be the happiest of your life, and that the New Year may be the most prosperous, I remain,

Sincerely yours,


Jos. W. Milson, Supt. M. & R. Dept.

December 12, 1927.

Requisition for Refinery Work

Extension of washing platform from top of drying room.

Will require one column and two or three I beams, with wood floor.

This is very necessary, now that we will operate both gold and silver cells which will require more floor space for washing purposes.

Respectfully,

Jos. W. Milson
Jos. W. Milson, Supt. M. & R. Dept.

M. & R. Dept.

December 12, 1927.

Hon. Frank E. Shepard,
Superintendent U. S. Mint,
Denver.

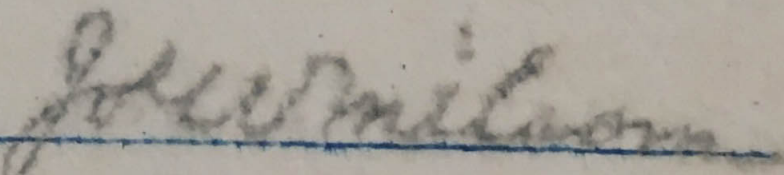
Sir:

During the last four months we have lost from this department two melters: Mr. Rush died and Mr. Lindhard has become incapacitated. When we start the Refinery the first of the year we shall need at least one more melter.

Arthur C. Eggert, a helper in the Refinery melting room, has been used as a melter for more than a year, and we have found him to be a willing and careful melter at all times.

I therefore recommend that Arthur C. Eggert be promoted to the position of melter and with melter's pay, to take effect on January 1st, 1928.

Respectfully submitted,


Jos. W. Milsom, Supt. M. & R. Dept.

February 17, 1928.

Hon. Frank E. Shepard,
Superintendent U. S. Mint,
Denver, Colo.

Sir:

Requisition is hereby made for much needed refinery equipment for extracting the gold and silver values from slags, pot-scrapings, etc., of the refinery melting room:

No. 1 Universal Crusher, jaw opening, 4 x 6 inches

No. 2 Bolthoff sample grinder, discharge all to go one way

Special right-hand Wilfley laboratory table, deck 24 x 50
inches

Automatic feeder for above table

Bidders may present bids for like machines of other makes, with full description thereof.

Our present method of treating these melting room sweeps is by grinding in a Chilean mill (the superintendent of machinery informs me that this was an old second-hand mill when obtained from the Carson City Mint over twenty years ago), pan-washing, and then sweating of the concentrates. This is a very slow, expensive process, and causes us to shut down the refinery melting room from two to four days each month. With our present limited number of employees in the melting room this materially interferes with our melting operations.

We have made a very careful computation of costs under the present method and also a like computation of costs under the new method contemplated by this equipment, and we find that there will be an actual saving with the new equipment of \$97.80 each month. As this equipment will cost approximately \$500, its entire cost will be saved in a half year's run of the refinery.

The old Chilean mill that we now have has been repaired a number of times. A new base plate was put in several years ago, and it is now so worn that it is dangerous for us to operate it

Superintendent - 2

in the usual way -- in other words, to operate it safely, we shall have to put in a charge and grind it to fineness and then stop the mill to take it out, which would further decrease the already slow operation of the mill. The superintendent of machinery informs me that to repair this mill will cost about \$100 and perhaps considerably more. If the new equipment can be procured in the near future, we can save the expense of repairing the old mill.

Respectfully,

Joe W. Milson
Jos. W. Milson, Supt. M. & R. Dept.

M. & R. Dept.

February 23, 1928.

Hon. Frank E. Shepard,
Superintendent U. S. Mint,
Denver, Colo.

Sir:

Requisition is hereby made for 300 pounds Phosphor Copper, which must be shotted, bright and dry, and contain not less than one nor more than two per cent. phosphorus; bidder specifying exact amount of phosphorus.

Also 100 pounds pure Manganese metal, containing not less than ninety-five per cent. manganese; and must be in small broken pieces not larger than chestnut in size.

Respectfully,

Jos W Milsom

Jos. W. Milsom, Supt. M. & R. Dept.

April 6, 1928.

M. & R. Dept.

The Chemical Sales Co.,
1122 Market St., Denver, Colo.

Gentlemen:

About February 20th, you billed us for one hundred pounds of Boronized Phosphor Copper. Will you please procure for us from the manufacturer of said product an analysis of this copper? Also said manufacturing company's pamphlet describing the various uses of Boronized Copper?

Respectfully,

Joe W. Milson

Joe. W. Milson, Supt. M. & R. Dept.

M. & R. Dept.

April 6, 1928.

Mr. H. D. Coleman,
Supt. M. & R. Dept.,
U. S. Mint, Philadelphia, Pa.

My dear Mr. Coleman:

Pardon me for bothering you again, but will you please advise me whether you put the manganese metal in all nickel melts and the phosphor copper in all bronze melts, and greatly oblige,

Yours very respectfully,

Jos W Milsom

Jos. W. Milsom, Supt. M. & R. Dept.

April 19, 1926.

M. & R. Dept.

Hon. Frank E. Shepard,
Superintendent U. S. Mint,
Denver.

Sir:

Herewith I present the data concerning the recent test operations on Refinery melting room slags:

Sweeps ground in ball mill and passed through 12 mesh screen. 231 lbs. passed through and 30 lbs. remained on screen; 231 lbs. represent sample worked on.

Sweeps were then quartered, and sample, cut out for assaying weighing 11.41 ozs. Troy, and ground to 100 mesh, hereafter referred to as "heads."

Heads assay	104.444 Au.	213.23 Ag.	ozs per ton
Tails assay, after pan-			
washing, quartering, and			
grinding to 100 mesh	21.970 "	52.53 "	" " " "
Gold recovery by pan-washing,	78.9%		
Silver " " "	75.3%		

Amalgamating test:

228.796 grms. ($\frac{1}{4}$ pound Avoir.) sample taken of original heads and triturated for one hour in a mortar with 8.89 ozs. Mercury. Mercury was separated from slimes by pan-washing. Slimes were dried, ground to 125 mesh and assayed as follows:

51.150 Au. 60.10 Ag. ozs. per ton.

Gold recovery by amalgamating,	51.0%
Silver " " "	71.8%

Expense by pan-washing method:

Grinding sweeps, 2 men seven hours	\$12.07
Pan-washing 231# sweeps, 2 men seven hours	12.07
Fluxing and mixing 65# tails, 1 hour	1.00
Sweating 65# tails (Flux, crucible, oil, etc.)	<u>20.35</u>
Total	\$45.39

Respectfully submitted,

Jos. W. Milson
Jos. W. Milson, Supt. M. & R. Dept.

M. & R. Dept.

May 8, 1928.

Hon. Frank E. Shepard,
Superintendent U. S. Mint,
Denver.

Sir:

Touching the matter of sealing vaults in the Denver Mint, I have carefully considered the proposition, and would suggest that in Vault H (mezzanine floor) be stored all Re-deposits on hand in settlement, all Gold Deposits of 1927 and prior years, all Mass Melts of 1926 and 1927, and sufficient Silver Deposits of years prior to 1928 to completely fill the vault. The classifications of such bullion are approximately as follows:

	Fine ounces	
	Gold	Silver
Re-deposits	84,811	169,809
Deposits	371,688	86,998
Mass Melts	37,690	23,539

Also store all Fine Gold bars and Coin bars in a compartment in the new silver vault in the basement, and this might then be sealed by the commission, because it would not need to be interfered with until we resume the coinage of gold. Of these items we have on hand,

Fine Gold bars	491,920 fine ounces
Coin bars	536,397 " "

to which will be added any or all of either kind that may come in before settlement.

Respectfully,

Joseph W. Milson
Jos. W. Milson, Supt. M. & R. Dept.

Messrs. T. J. Quirk,
 E. J. Murphy, and
 W. L. Hill,
 Settlement Commission.

Gentlemen:

The Melting and Refining department of the Denver Mint closed its accounts for the fiscal year 1928 with a Gold surplus of 104.591 fine ounces, and a Silver surplus of 963.26 fine ounces. The gains were obtained as follows:

	Gold	Silver
Refinery	69.641	593.41
Ingot room	<u>39.701</u>	<u>211.21</u>
	109.342	804.62
Assayer's gain		7.39
" loss	<u>.374</u>	
	108.968	812.01
Departmental loss	4.377	
" gain	<u> </u>	<u>151.25</u>
	104.591	963.26

The Refinery surplus in Gold was obtained from the old melting room flue back of the furnaces which had not been taken down for five years.

During the past year in the Ingot room we tore out all our old furnaces and cleaned the settling chambers back of them, and from this source obtained in sweeps 28.237 ounces of Gold, and the balance of the Ingot room surplus in Gold was partly from gain in ingot making and partly from sweeps of settling chamber contents.

The Silver gain in the Refinery was obtained as follows:

Sweeps Lot No. 5 contained 195.33 ounces of silver which came very largely from the old flue heretofore referred to, and the balance was obtained from operations.

The Ingot room Silver surplus of 211.21 was obtained from regular ingot operations and recoveries from the old furnaces and settling chambers of 171.09 fine ounces in sweeps.

The departmental loss in Gold came from mass melting and making merchant bars.

Settlement - 2

The departmental gain in Silver is due to the melting loss allowance on uncurrent subsidiary silver coin which was not melted -- gross weight, 217,766.30 ounces delivered in settlement.

Respectfully,

Jos. W. Milsom

Jos. W. M. Milsom, Supt. M. & R. Dept.

September 17, 1928.

Hon. Frank E. Shepard,
Superintendent U. S. Mint,
Denver.

Sir:

Referring to the Director's letter of August 2, 1928, wherein an explanation of the discrepancy between the M. & R. settlement balance and the Account Current balance is asked for, I beg to state as follows:

A careful review of all the transactions during the year of the M. & R. department has been made and ^{the same} found correct; and I am therefore of the opinion that the discrepancy of 3602.11 ozs. plus in Nickel and 3602.11 minus in Bronze is due to an error in the items of minor coinage metals on hand at settlement (said items being derived by estimate and not by actual weight). Accordingly, Form 900, "Minor Coinage Metals," should be changed in the following particulars on the credit side of the Nickel account under the item "On hand at settlement" --

"Ingot copper" should be increased 3602.11, making a total of 168,527.93; and "Shot nickel" should be reduced by the same amount, making that item 117,308.30.

Respectfully,

Jos. W. Milson
Jos. W. Milson, Supt. M. & R. Dept.

September 28, 1928.

Hon. Frank E. Shepard,
Superintendent U. S. Mint,
Denver.

Sir:

When the Director was here recently, he indicated that he would approve a request on the New York Assay office for a small quantity of alloy or residuum, or both, containing a few grains each of Rhodium and Iridium.

Will you please make such request for the same, for the use of this department?

Respectfully,

Joe W. Milson

Jos. W. Milson, Supt. M. & R. Dept.

M. & R. Dept.

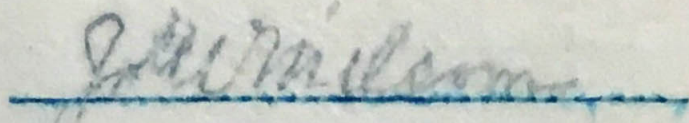
November 9, 1928.

Hon. Frank E. Shepard,
Superintendent U. S. Mint,
Denver, Colo.

Sir:

We are still short one melter in the M. & R. department, and to correct this condition I hereby recommend that Walter G. Bos-a helper, well, be promoted to the position of melter and with melter's pay, to take effect December 1st, 1928. He has been used as a melter for a considerable time, and we have found him to be willing and careful in his work at all times, and is said by the foreman of the ingot room to be in every way fully competent to take charge of a furnace.

Respectfully,


Jos. W. Milson, Supt. M. & R. Dept.

January 29, 1929.

M. & R. Dept.

Hon. Frank E. Shepard,
Superintendent U. S. Mint,
Denver.

Sir:

The Alsop Engineering Co., of New York City, manufacture a mixer that would be a big help in precipitating our silver nitrate solutions.

We add chloride solutions to the silver nitrate solutions and stir them with a paddle. It requires a violent agitation to "break up" the silver chloride formed and cause it to settle, which cannot be accomplished satisfactorily by stirring with a paddle. Quite frequently, solution is slopped over the top of the tank on to the floor, which always causes more or less loss of silver.

Some solutions give off nitrous oxide gas when chloride solutions are added, and will not settle until the gas is stirred out, a condition that is practically impossible to overcome by the hand method of agitation.

The mechanical mixer would enable us to "break up" and cause to settle solutions that are low in silver nitrate content. This cannot be done by stirring with a paddle.

The Alsop company gives an unqualified guarantee and free trial offer on standard machines. This offer should be taken advantage of, if possible. Their No. 3 Hy-Speed mixer seems best adapted to our requirements.

Specifications

Motor: one-third, plus, horse-power, 440 R.P.M., 90% enclosed to shed liquid. Double bearings on drive shaft with wick-packed oil reservoirs. Angle-cut gears to relieve thrust on bearings.

Two eight-inch "push-pull" propellers (one throwing solution up, the other down) that can be moved up or down on the propeller shaft. Shaft to be about 21 inches long, or to reach within about 3 inches of the bottom of a two-foot tank when clamped on the long side of the tank which has an area of 2x4 feet. Propellers and shaft to be made of aluminum.

Motor to be furnished with a strong clamp that will open three inches. Motor hinged to clamp so that propeller shaft

Superintendent - 2

can be moved over a radius of 90 degrees, and furnished with ten-foot extension cord and switch to plug into light socket. Current used is 220 volt, A.C., single phase.

This mixer would expedite our work and produce better results than are possible by our present paddle methods.

Respectfully,

Jos. W. Milson

Jos. W. Milson, Supt. M. & R. Dept.

M. & R. Dept.

February 2, 1929.

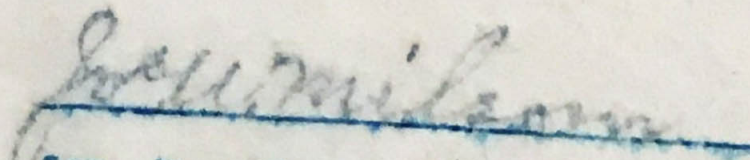
Hon. Frank E. Shepard,
Superintendent U. S. Mint,
Denver.

Sir:

Sheridan B. Wilcox, a melter in the Refinery melting room, has been sick and off duty several times during the last two or three years, and this morning he informed me that it was impossible to continue his work as a melter.

I therefore certify that Sheridan B. Wilcox cannot continue to perform his duties as a melter, owing to physical disabilities.

Respectfully,

A handwritten signature in dark ink, appearing to read "Jos. W. Milson", written over a horizontal line.

Jos. W. Milson, Supt. M. & R. Dept.

M. & R. Dept.

March 5, 1929.

Hon. Frank E. Shepard,
Superintendent U. S. Mint,
Denver, Colo.

Sir:

In complying with the instructions contained in the Director's letter of December 15, 1928, we weighed all the minor coinage metals and alloy copper in the possession of the Melting and Refining Department of the Denver Mint, at the close of business on the 28th day of February, 1929, and the results obtained are fully set forth in the following statement which shows the actual weights obtained on minor coinage metals and alloy copper, the amount of nickel and bronze metals operated upon, July 1, 1928 to February 28, 1929, the amount of wastage during said period, and the book accounts of the M. & R. Department on said February 28, 1929:

M. & R. Dept.

March 5, 1929.

MINOR COINAGE METALS and ALLOY COPPER on hand, February 28, 1929.

	Feb. 28/29 Weights Troy ozs.	M. & R. Accounts Troy ozs.
Electrolytic Copper	553,639.58	
Miscellaneous "	979.00	
Total	554,618.58	
Less ALLOY COPPER	185,234.64	
Net Copper MINOR COINAGE &/c	369,383.94	
		Nickel A/c 297,757.88
		Bronze " 50,121.32
Shot Nickel	277,972.92	274,539.66
Nickel Clips	2,434.00	2,434.00
" Con'd Coin & Blanks	236.50	236.50
" Tops & Scrap	264.00	264.00
" Kings	2,160.50	2,160.50
" WASTAGE		115.66
Bronze Clips	8,008.90	8,008.90
" Tops & Scrap	1,308.00	1,308.00
" Kings	3,022.80	3,022.80
Tin	52,806.25	52,806.25
Zinc	82,585.42	82,585.42
Alloy (40% Tin; 60% Zinc)	37,086.17	
Bronze WASTAGE		4,947.47
Totals	837,169.40	808,932.88
ALLOY COPPER	185,234.64	185,234.64
Nickel Metals operated upon, July 1, 1928-Feb. 28, 1929		875,777.36
" WASTAGE		115.66
Bronze Metal operated upon, ditto		3,795,908.17
" WASTAGE		4,947.47

Respectfully,

John W. Milson
 Jos. W. Milson, Supt. M. & R. Dept.

191.350.00
251.167.00
258.890.00
4,265.00
337,387.00
21,506.00
1.956.301.00 *

89.85
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4.32
596.65
7.33
321.64
581.21
5.03
7.85
24.92
33.86
119.27
64.88
.64
276.69
696.27
2.831.22 *

United States Mint at Denver, Colo., March 5, 1929.

Hon. Frank E. Shepard,
Superintendent U. S. Mint,
Denver, Colo.

Sir:

In complying with the instructions contained in the Director's letter of December 15, 1928, we weighed all the minor coinage metals and alloy copper in the possession of the Melting and Refining Department of the Denver Mint, at the close of business on the 28th day of February, 1929, and the results obtained are fully set forth in the following statement which shows the actual weights obtained on minor coinage metals and alloy copper, the surplus and wastage of said weights as against the book accounts, the amount of nickel and bronze metals operated upon, July 1, 1928, to February 28, 1929, the amount of wastage during said period, and the book accounts of the M. & R. Department on said February 28, 1929:

MINOR COINAGE METALS and ALLOY COPPER on hand, February 28, 1929:

	Feb. 28/29 Weights Troy ozs.	M. & R. Accounts Troy ozs.	Differences S: Surplus W: Wastage
Electrolytic Copper	553,539.58		
Miscellaneous "	979.00		
Total "	554,518.58		
Less ALLOY COPPER	185,234.64		
Net Copper M.C. A/c	369,283.94	347,879.18	S 21,404.76
Shot Nickel	277,972.92	274,369.66	S 3,603.26
Tin	52,806.25	51,229.39	S 1,576.86
Zinc	82,585.42	75,870.65	S 6,714.77
Alloy (40% T; 60% Z)	37,086.17	37,086.17	
Nickel Clips	2,434.00	2,434.00	
" Con'd C. & B.	236.50	236.50	
" Tops & Scrap	264.00	264.00	
" Kings	2,160.50	2,160.50	
" WASTAGE (8 mos.)		115.66	W 115.66
Bronze Clips	8,008.90	8,008.90	
" Tops & Scrap	1,308.00	1,308.00	
" Kings	3,022.80	3,022.80	
" WASTAGE (8 mos.)		4,947.47	W 4,947.47
Totals	837,169.40	808,932.88	S 33,299.65 W 5,063.13

ALLOY COPPER	185,234.64	185,234.64
--------------	------------	------------

Nickel Metals operated upon, July-Feb., inc.	875,777.36
" Wastage for period ($\frac{1}{4}$ Nickel; $\frac{3}{4}$ Copper) (28.92 oz; 86.74 oz)	115.66

Bronze Metals operated ditto	3,795,908.17
" Wastage for period	4,947.47

Respectfully submitted,

Jos. W. Milson
Jos. W. Milson, Supt. M. & R. Dept.

April 2, 1929.

M. & R. Dept.

Hon. Frank E. Shepard,
Superintendent U. S. Mint,
Denver.

Sir:

In response to the Director's letter of the 16th ult., regarding the surplus of minor coinage metals, as disclosed by the "weigh-up" of February 28th last, we have made a thorough examination of all minor coinage operations in this mint from August 28th, 1913 (which appears to be the last year the minor coinage metals were weighed at settlement), to February 28th, 1929, and find that we have no data of the gains and losses in the receipts of copper prior to March, 1916. Since then, and to February 28th last, we received 48,453,810.39 ozs., and the memoranda relating thereto show gains amounting to 18,885.41 ozs. and losses of 9,734.37 ozs., making a net gain of 9,151.04 ozs. which was not charged to this department, and so is included in the February 28th surplus of 21,404.76 ozs. Deducting this net gain of 9,151.04 ozs. therefrom, there is left unaccounted for 12,253.72 ozs. of copper in addition to the nickel, tin, and zinc, as shown by said "weigh-up" of February 28th, this year.

There appears only one other source from which these surpluses could accrue, and that is in excessive wastages credited prior to fiscal year 1922, and we believe that was the source; and such belief is based upon the following facts, viz:

In the nickel account, fiscal 1916, the wastage shows a loss of 46.03 ozs. per melt; in 1917, 31.46 ozs., and in 1918, 30.43 ozs., which does not seem possible, as the average loss per melt for eleven other years (all of the period we are considering, except 1916, 1917, and 1918) was 6.88 ozs. per melt. So it seems certain that in said years 1916, -17, and -18, the actual wastages were far above the average, but it does not seem possible that they could have reached 46.03 ozs. per melt in 1916, 31.46 ozs. in 1917, and 30.43 ozs. in 1918.

In the bronze account, in 1914, the wastage credited was 18.99 ozs. per melt, and in 1921 the wastage shown was 28.22 ozs. per melt, while the average wastage for the other eleven years of said period was 9.04 ozs. per melt; so it is probable that, while the actual wastage was in excess of the average, yet it seems improbable that it was as large as recorded for said years 1914 and 1921.

Superintendent - 2

Beginning with the fiscal year 1922, we inaugurated changes in these accounts and ever since that time have had an accurate detailed record of all transactions in minor coinage work, and it is of such a character as to eliminate any chance of obtaining surpluses that cannot be satisfactorily accounted for.

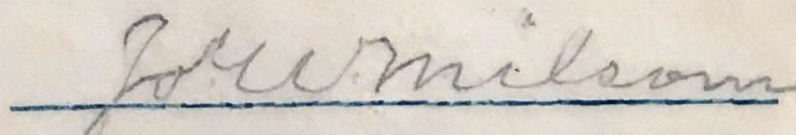
The method of conducting the minor coinage ingot work follows:

The melts are made up of virgin metals and (or) uncurrent coin to a weight of from 2000 to 3000 ozs., the amount being controlled by the quantity of clippings available; and these melts are sent into the ingot room together with the clippings in bulk, and the melters add to the make-up of each melt the amount of clippings necessary to bring the gross weight of the melt to 3600 to 4000 ounces. The weight of each make-up melt and also the clippings are carefully checked, and all weights entered in a small work-book and later transferred to the regular ingot make-up book, and also posted in a recapitulation book, as a charge against the ingot room, and a similar proceeding is followed when ingots and other metals are returned by the ingot room and credited to it.

In bronze work, the ingot room occasionally makes sweat melts of charcoal and pot scrapings and the resulting "kings" are returned and credited to the ingot room, and when a sufficient number of kings are on hand to make a melt they are sent back to the ingot room and charged to it the same as any other metal.

On the last day of each month, we weigh up and credit the ingot room with all clippings, tops, and pot kings, or any other metal on hand, and the difference between the debits and credits is the actual amount of wastage for the month. The recapitulation book above referred to shows in daily detail the kind and character of all metals sent to or received from the ingot room.

Respectfully,


 Jos. W. Milson, Supt. M. & R. Dept.

M. & R. Dept.

April 15, 1939.

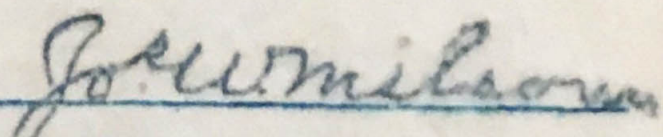
Hon. Frank E. Shepard,
Superintendent U. S. Mint,
Denver.

Sir:

We have a melt of fine gold, No. 27 of 1938, that was refined in a special way, and we would like very much to have samples from that melt and as well samples from our regular run of fine gold analyzed by the Bureau of Standards, or other competent agency, to determine accurately the differences between the two kinds of product as to ductility, malleability, hardness, and content of any base elements such as lead, bismuth, antimony, or tellurium that would tend to make the gold brittle.

If permission is given for the above purpose, please advise me as to the size of samples desired.

Respectfully,


Jos. W. Milsom, Supt. M. & R. Dept.

M. & R. Dept.

May 3, 1929.

Hon. Frank E. Shepard,
Superintendent U. S. Mint,
Denver.

Sir:

The Coors Porcelain Co., of Golden, Colo., under its contract of February 3, 1928, has delivered to the Mint two of the large porcelain jars and four covers, and we have been using them for quite a while.

Yesterday I went to their plant at Golden to ascertain why the balance of the order was not delivered, and found that the company had quit using its old furnace for large pieces and was installing an up-to-date tunnel furnace for all furnace work, and that it would be finished about June 1st, and then about 15 days would be required to heat it up properly and after that it would be ready for continuous use. I do not believe the company can make delivery of the balance of the contract before July 1st, but I believe it can do so early in the next fiscal year.

We need this porcelain ware in our Refinery work, and know of no other place in the United States where we can obtain it; and so we earnestly hope that a little more time may be given the Coors company on this contract, as we feel confident it can make and deliver the balance of the goods in the near future.

Respectfully,

Jos. W. Milson
Jos. W. Milson, Supt. M. & R. Dept.

M. & R. Dept.

May 13, 1929.

Hon. Frank E. Shepard,
Superintendent U. S. Mint,
Denver, Colo.

Sir:

There are eight men employed in the Ingot melting room at the present time, as follows:

- 1 Foreman
- 1 Melter
- 1 Skilled workman, and,
- 5 Helpers

The number of bronze melts made the first five days of the week is twelve and on Saturday eleven bronze and two or three alloy melts. In April there were 303 bronze melts, 10 alloy melts, and 9 sweat melts; and the average weight of the bronze melts was 3,444 ounces.

The amount of bronze melted in April was 71,564.57 lbs.

Respectfully submitted,

Jos. W. Milson
Jos. W. Milson, Supt. M. & R. Dept.

M. & R. Dept.

May 13, 1929.

Hon. Frank E. Shepard,
Superintendent U. S. Mint,
Denver, Colo.

Sir:

The letter of the Director of the Mint to Mr. Kelly, superintendent of the San Francisco mint under date of April 30th regarding crucibles, is interesting indeed, but does not give the San Francisco record on the Dixon crucible, which is the same that we use. Our average use of the Dixon crucible is as follows:

		Ozs. per melt	Total ozs..
Bronze,	21 melts	3,450	72,450
Nickel,	12 "	3,400	40,800
Silver anodes,	30 "	5,200	156,000
Fine gold,	4 "	9,000	36,000
Black gold	2 "	6,000	12,000

A spill in our splendid furnaces might be quite expensive, so we take no chances on the crucible giving way, but use it for other purposes.

We have not used the Dixon on either silver or gold ingots.

Respectfully,

Joe W. Milson
Jos. W. Milson, Supt. M. & R. Dept.

M. & R. Dept.

May 27, 1929.

Mr. H. D. Coleman,
Supt. M. & R. Dept.,
Philadelphia Mint.

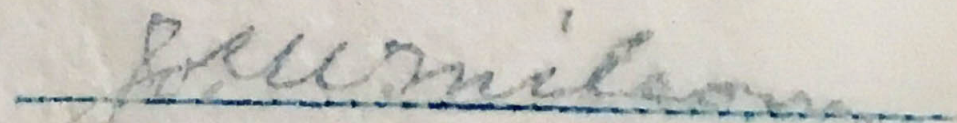
Dear Sir:

I understand that the phosphor copper you use in bronze work is paid for from the Minor Coinage Metal fund, and is charged against your bronze account; and I have been advised that the manganese metal you use in nickel ingot work is paid for from the Contingent fund.

If the Contingent fund does pay for the manganese, how do you charge it against your nickel account and adjust with the bookkeeper?

Will you please advise me at your convenience, and greatly oblige,

Yours sincerely,


Jos. W. Milsom, Supt. M. & R. Dept.

M. & R. Dept.

June 3, 1929.

Requisition for Refinery Supplies:

Two hard rubber, lined on inside and covered on outside, Steel filters, 20x34x20 inches deep, inside measurements. One inch ledge around inside, $1\frac{1}{2}$ inches from bottom of filter to bottom of ledge, to hold filtering boards. Ledge about 1 inch thick. It may be built solid from bottom of filter to top of ledge if advantageous to the bidder, making an offset $2\frac{1}{2}$ inches high and 1 inch wide around bottom of filter on the inside. A 2 inch hole in one end, even with bottom of filter and tapering toward inside at a 10 degree angle. Hole must have a ring projecting around it something on the order of the one shown in accompanying cut, to hold a ring clamp. Filters must be strong enough to carry a load of 1200 lbs. avoird.

Two hard rubber, lined on inside and covered on outside, steel tanks, 2x4x2 feet deep, inside measurements, with a 2 inch flat rim around top. No outlets. Tanks must be strong enough to hold a load of approximately 1700 lbs. of solution and slimes. The inside rubber lining shall consist of a thin layer of soft rubber between the metal surface and the hard rubber lining and vulcanized to the metal, and must withstand temperatures from zero to 212 degrees F.

Jos. W. Milson
 Jos. W. Milson, Supt. M. & R. Dept.

M. & R. Dept.

June 10, 1929.

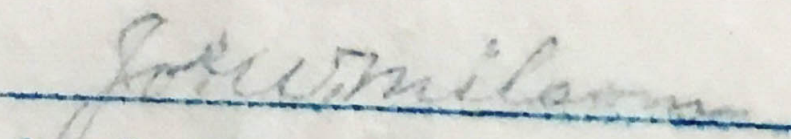
Hon. Frank E. Shepard,
Superintendent U. S. Mint,
Denver, Colo.

Sir:

The notification of the reclassification of the position of superintendent of the Melting and Refining department of the Denver Mint, which yields a material increase in my salary has been received. To the Hon. R. J. Grant, Director of the Mint and as well to yourself I here record my heartfelt gratitude for this much appreciated blessing, and I also extend my earnest thanks for the extensions of my retirement age, so graciously bestowed.

In faithfulness and loyalty, I remain,

Yours respectfully,


Jos. W. Milsom, Supt. M. & R. Dept.

M. & R. Dept.

June 29, 1929.

Messrs. S. B. Frantz, Chairman,
J. C. Bates, and
F. S. Fletcher,
Settlement Commission.

Gentlemen:

The weigh-up of the bullion in possession of the Melting and Refining department of the Denver Mint, which you have just concluded, discloses that we have delivered in settlement a surplus of 129.910 ounces of gold and 998.32 ounces of silver. The several sections of our department from which said gains were obtained are, to wit:

Refinery	Gold	104.637	Silver	554.18
Ingot room	"	13.779	"	219.40
Assayer			"	12.69
Miscellaneous	"	11.728	"	211.09
		<u>130.144</u>		<u>997.36</u>
Assayer's wastage		.463		
Total Gains,	Gold	129.681	Silver	997.36

which are accounted for as follows:

The Refinery cleaned out the sump in the basement, and obtained therefrom a gain of gold of 101.935 ozs. and silver 270.22 ozs. The gain on gold bullion arising from being charged to the refinery at one-quarter thousandth and the fine metal being credited at one-tenth thousandth, accounts for a gold gain of 50.434 ozs.; and in silver charged at one-half thousandth and the fine metal returned credited at one-quarter thousandth, accounts for a silver gain of 109.72 ozs; making a total gain from other than regular operations of gold 152.369 ozs. and silver 379.94 ozs.; and as the refinery surpluses were gold, 104.637 and silver, 554.18, these figures show a refinery net result from regular operations of a gold wastage of 47.762 ozs. and a silver gain of 174.24 ozs.

The amount of bullion sent to the refinery during the year was gold, 455,846.346 ozs. and the amount returned was 455,950.983 ozs.; and the amount of silver sent was 553,662.48 ozs. and the amount returned was 554,216.66 ozs.; and the apparent gold wastage of 47.762 ozs. and silver surplus of 174.24 ozs. both accrued from the regular refinery operations, and from the nature of the operations it is impossible to give any details as to the particular sources.

The Ingot room cleaned out the stack settling chamber on the top floor and obtained therefrom the following gains: gold, 4.641 ozs. and silver, 11.17 ozs. The amount of bullion sent into the ingot room during the year was, gold, 11,441.893 ozs. and the amount

M. & R. Dept.

Settlement commission - 2

returned was 11,455.672 ozs., showing a surplus of 13.779 ozs. The amount of silver sent in was 873,933.01 ozs., and the amount returned was 874,152.41 ozs., showing a surplus of 219.40 ozs. Deducting the settling chamber gains leaves 9.138 ozs. of gold and 208.23 ozs. of silver to be accounted for. As to the gold, it was obtained from the sweeps, and the silver was an operating gain in making silver ingots, in which we used 231,899.82 ozs. of clippings returned by the Coiner

The Assayer's gold account is normal, and the silver account with a surplus of 12.69 ozs. has been satisfactorily explained.

The Miscellaneous accounts gains in gold and silver follows:

Gains on Redeposits,	Gold,	8.007 ozs.	Silver,	5.19 ozs.
Mass Melts		1.643		.86
Grains account		3.016		
Uncurrent silver				
coin unmelted				<u>229.46</u>
Total		12.666		235.51
Losses: Merchant bars,				
grains, etc.		<u>.938</u>		<u>24.42</u>
Net gains		11.728		211.09

Respectfully submitted,

Joe W. Milsom
Joe W. Milsom, Supt. M. & R. Dept.

M. & R. Dept.

July 30, 1929.

Hon. Frank E. Shepard,
Superintendent U. S. Mint,
Denver.

Sir:

The extracts from the reports of the Calcutta-Bombay Mints are very interesting; and as they are continuing their research work it is probable that they will eventually discover ways of solving some of the disputed questions now confronting us.

As to the cupro-nickel alloy, they say it was investigated "with the object of finding out the cause of brittleness which occurred only after annealing," and they found that it was caused by carbon, and "manganese was suggested as the metal which besides its oxidising properties helped in some other way to remove brittleness." The brittleness occurred only after annealing, but the carbon was there before the annealing, and they do not state what action in the annealing process caused the brittleness. However, on this point, Mr. W. B. Price, chief chemist and metallurgist of the Scovill Mfg. Co., of Waterbury, Conn., who made an examination of our brittle blanks of April, 1928, says:

"An examination has revealed that the brittleness in the blanks was caused by the separation of free graphitic carbon during the annealing treatment. This was proven by dissolving pieces of the annealed and unannealed blanks in concentrated nitric acid and filtering. The annealed sample, which was brittle, left a deposit of carbon on the filter paper, while the unannealed sample left no deposit whatever."

He further says: "It is almost impossible to keep cupro-nickel free from carbon. Fortunately a reasonable amount of carbon may be tolerated if the annealing process is carefully regulated. We have found that if the carbon content is below 0.07% no trouble will be encountered, provided the metal is annealed at a temperature not exceeding 1224° F. To demonstrate this point, we have annealed some of the unannealed samples submitted and find that they show no signs of brittleness and yet are thoroughly recrystallized at 1224° F."

I also want to submit my own experience on this point of annealing: When we were having so much trouble with brittle blanks (after annealing) early in 1928, I went to the rolling room and obtained a few blanks and then waited until the melts from which they were obtained had been returned to the press room after annealing and these were all so brittle that they could not be easily stamped. I then took the blanks I had obtained to the assayer and asked him to anneal them for me, which he did at a temperature of approximately 1200° F,

-2-

and after annealing at that temperature they were soft and ductile, and this shows a very close coincidence with the findings of Mr. Price hereinbefore set forth.

In 1927 I had taken up this matter of occasional brittleness in nickel and bronze ingots with Mr. Coleman, superintendent of the M. & R. department of the Philadelphia Mint; and he advised me fully as to his methods of curing bad metals of either kind. So when our worst troubles occurred in April, 1928, I knew the remedy, and as soon as we could obtain the necessary materials our troubles were over; and we have produced only good and ductile ingots since adopting the following procedure:

We use one-tenth of one per centum of manganese metal in each nickel melt, and the results are wonderful. We immediately began remelting large quantities of the so-called brittle ingots, clippings, and blanks that the coiner could not use, and solely with the addition of the manganese it all produced first-class ingots, notwithstanding the carbon content of the nickel used was 0.96%. So the manganese did remove the brittleness, and must have in some way affected the carbon as, I understand, the coiner did not change the temperature in annealing the blanks.

I am confident that we shall have no further trouble with either nickel or bronze ingots.

Respectfully submitted,

Jos. W. Milson

Jos. W. Milson, Supt. M. & R. Dept.

August 27, 1929.

Hon. Frank E. Shepard,
Superintendent U. S. Mint,
Denver.

Sir:

In response to a request from the United States Employees' Compensation Commission, I respectfully submit the following statement about the accident to Mr. E. C. Tumlin, so far as the facts relating to it are known to me:

Mr. Tumlin was a janitor in the Denver Mint and was doing some wall-cleaning in the office of the weigh clerk on the day the accident occurred. That office is directly across the hall from where the office of Mr. Milson, superintendent of melting and refining, was then located. I was employed as a clerk under Mr. Milson; Mr. Tumlin was not working under my direction. Hearing an unusual sound, I looked around and saw Mr. Tumlin on the floor at the foot of the scaffolding on which he and others had been working. I immediately went to him and with Mr. Franklin, another janitor, helped him to arise. Mr. Franklin helped him out of the room and down the hall. He limped and seemed to be in much pain from the fall. I did not see him fall and do not know how far he fell.

The quotation from my letter of January 9, 1928, to Mr. Tumlin contains this:

"In my daily memorandum book I find for Thursday, January 25, 1917, the following item: 'Tumlin falls with scaffolding.'"

This was not an official record of the accident, but was simply a notation in my pocket diary.

Respectfully,

James St. John

Denver, Colo., October 9, 1929.

REPORT TO THE DEPARTMENT

OF THE

UNITED STATES BUREAU OF MINES
ending June 30, 1929.

		<u>EFFICIENCY</u>	<u>CONDUCT</u>
St. John, Thomas	Clark	98	98
Spencer, Geo. N.	do	98	98
Adams, W. C.	Skilled Workman	98	98
Seibert, C. J.	Foreman Refinery	98	98
Beckins, Harry	Skilled Workman	98	98
Arnold, R. C.	do	98	98
Hobson, J. B.	Solper	95	98
McClung, B. F.	do	95	98
Allen, W. R.	Foreman Ref'y Mtg Rm	98	98
Wilcox, R. E.	Melter	80	98
Rebert, A. C.	do	95	98
Boswell, W. C.	do	95	98
Whitaker, J. E.	Foreman Ingot Rm	98	98
Lowell, J. J.	Melter	98	98
Spencer, C. J.	Skilled Workman	98	98
Deane, V. E.	Melter	95	98

Respectfully submitted,

Supt. M. & R. Dept.

Denver, Colo., October 9, 1929.

MELTING AND REFINING DEPARTMENT

DENVER MINT

Rating of employees for six months ending June 30, 1929.

<u>NAME</u>	<u>POSITION</u>	<u>EFFICIENCY</u>	<u>CONDUCT</u>
St. John, Farnum	Clerk	98	98
Spencer, Geo. N.	do	98	98
Waters, R. C.	Skilled Workman	98	98
Berstadt, G. J. Jr	Foreman Refinery	98	98
Baskind, Harry	Skilled Workman	98	98
Arnold, R. G.	do	98	98
Hobson, J. B.	Helper	95	98
McClung, B. F.	do	95	98
Welsh, W. R.	Foreman Ref'y Mltg Rm	98	98
Wilcox, S. B.	Melter	80	98
Eggert, A. C.	do	95	98
Boswell, W. G.	do	95	98
Whitaker, S. R.	Foreman Ingot Rm	98	98
Donahue, J. J.	Melter	98	98
Bucher, G. J.	Skilled Workman	98	98
Dardis, W. H.	Helper	95	98

Respectfully submitted,

John Milam
Supt. M. & R. Dept.

M. & R. Dept.

October 21, 1929.

Hon. Frank E. Shepard,
Superintendent U. S. Mint,
Denver, Colo.

Sir:

In the fiscal year 1929 we melted the amounts of metals hereinafter set forth, to produce the number of ingot melts indicated, to wit:

Metal	Melts	Weight	Average
Silver	228	971,539.25	4261
Nickel	260	875,777.36	3368
Bronze	2011	6,995,755.97	3478

So the average weight per melt, as shown, is of gross metals melted and not the ingots.

Respectfully,

Jos. W. Milson

Jos. W. Milson, Supt. M. & R. Dept.

October 22, 1929.

M. & R. Dept.

American Hard Rubber Co.,
11 Mercer St.,
New York City, N. Y.

Gentlemen:

Referring to your steel body filters and tanks, rubber lined,
may I ask this question: If the rubber lining should be damaged
in any way, would it cause a total loss, or would it be possible
to repair it successfully,

Respectfully,

J. W. Milson
Jos. W. Milson, Supt. M. & R. Dept.

M. & R. Dept.

November 13, 1929.

Hon. Frank E. Shepard,
Superintendent U. S. Mint,
Denver, Colo.

Sir:

Referring to the letter of the American Hard Rubber Co., under date of the 9th inst.:

I have changed its sketch of the filter tank to agree with our original intention. The outlet projection should be at a right angle to the end of tank, as the ten degree taper refers only to the hole, which is two inches in diameter at the outside end and reduced with the ten degree taper to the inside end of hole.

The projection extends from the end of the tank $1\frac{3}{8}$ " with diameter of $3\frac{1}{8}$ " to the flange which is one-half inch wide and $3\frac{1}{2}$ inches in diameter, with no bolt hole.

We do not want a cover for the tank, and as the said company evidently included the cover cost in making its bid, it would probably allow some reduction in price on account of its elimination.

This filter tank is to take the place of a stoneware filter; so perfect exactness in measurements is not absolutely necessary.

Respectfully,

Jos. W. Milsom
Jos. W. Milsom, Supt. M. & R. Dept.

December 2, 1929.

Hon. Frank E. Shepard,
Superintendent U. S. Mint, Denver.

Sir:

The furnace repairs in the Ingot melting room for the month of November, 1929, were as follows:

Nov. 7, No. 7, Repaired tuyere. Russell, melter, time 2 hrs.

" 8 " 8, Spill, new pedestal and necessary patching.

Russell, melter, time 7 hrs.

" 11, " 4, Fire ring, tuyere and bottom repaired.

Welsh, melter, time 7 hrs.

" 14, " 3, Fixed tuyere and patched fire ring and furnace sides. No regular melter, time 8 hrs.

" 26, " 8, New fire and iron ring, pedestal enlarged, furnace sides, bottom and tuyere repaired.

Russell, melter, time $7\frac{1}{2}$ hrs.

Respectfully,

Jos. W. Milson
Jos. W. Milson, Supt. M. & R. Dept.

(Translation by Mr. Borstadt)

Berlin, Germany.
Dec. 2, 1929.

The Mint of the United States,
Treasury Dept.,
Denver, Colo.

We thank you for your cordial letter of Nov. 12, contents of which we have carefully noted.

In reference to the first part of your letter concerning the filter, of which you have sent us four photographs, we will shortly go into it, and ask you for a little patience.

In reference to the second part of your letter concerning the jar, we offer you for delivery from stock: 5 hard porcelain jars, form 0,1240, contents 110 liter, according to inclosed catalog cut from page 95 of our catalog. Price \$79.20 without packing and not insured.

These jars would be packed in five boxes, 80x80x80 cubic centimeters and would weigh 20 kilograms each. The cost for one box and packing would be about 14 Reich-marks; freight charges from factory in Berlin to New York would be \$7.00 each.

With this opportunity we are sending, under separate cover, our new industry catalog, in which you will find on page 93 jar #0,1240. The price list for this catalog we do not possess at this time.

In your preceding letter we notice that you could give us the order direct [preceding letter stated that order could not be given direct] or also through the Denver Fire Clay Co., American Kreuger and Toll Corp., who are no more our representatives, or Paul Abbe, Inc., Little Falls, N. J. At this time we are not represented in the United States but order may be placed with any importing firm.

We look forward to any other communication with interest.

Staatliche Porzellan Manufaktur, Berlin.

January 9, 1930

M. & R. Dept.

Melting and Refining Department, Denver Mint

Rating of employees for six months ended December 31, 1929:

Name	Position	Efficiency	Conduct
St. John, Farnum	Clerk	100	100
Spencer, Geo. H.	Do	100	100
Waters, R. C.	Skilled workman	100	100
Boratadt, Geo. J. Jr.	Foreman Refinery	100	100
Baskind, Harry	Skilled workman	100	100
Arnold, R. G.	Do	100	100
Hobson, J. B.	Helper	97	100
McClung, B. F.	Do	97	100
Welsh, W. R.	Foreman Ref'y Mltg. Room	100	100
Eggert, A. C.	Melter	98	100
Boswell, W. G.	Do	98	100
Whitaker, S. R.	Foreman Ingot Mlth. Room	100	100
Donahue, J. J.	Melter	100	100
Bucher, Geo. J.	Skilled workman	98	98
Ardis, W. N.	Helper	97	100
Fannery, Frank	Do	96	100
Birce, R. E.	Do	96	100
Russell, Roy G.	Do	97	100

Respectfully submitted,

Joe W. Milsom

 Joe W. Milsom, Supt. M. & R. Dept.

M. & R. Dept.

April 4, 1930.

Hon. Frank E. Shepard,
Superintendent U. S. Mint,
Denver.

Sir:

In reply to the letter of March 31st, 1930, from the United States Employees' Compensation Commission, and which has been referred to this department, the following statement is respectfully submitted:

Samuel R. Whitaker who claims to have contracted a disability on January 15th last, is foreman of the ingot melting room in the Mint at Denver. He has general supervision of the work of the room, and also takes an active part at various times in operating a melting furnace, pouring the molten metal, handling 75-pound moulds, "pickling" the ingots in an acid solution, and doing other work incident to the manufacture of ingots suitable for coinage purposes.

He wears asbestos and other mitts as a protection against the heat, but these become very warm, and in fact most of the operations of the room are performed under conditions of high temperature. There are sulphuric acid fumes from the pickling tank into which the newly poured ingots are plunged. Slight burns, and abrasions of the skin incurred in the handling of the metal, are not infrequent.

For several months -- covering the time of the reported injury -- the work of the room has been confined to the manufacture of copper ingots.

He had a similar trouble in 1906 when for some four or five months he worked in the cell room of the refinery in this Mint where acid fumes are encountered.

No other employee has been affected in the same manner, nor has Mr. Whitaker's work been changed recently in any way.

Respectfully,

Farnum St. John

Acting Superintendent M. & R. Dept.

April 17, 1930.

M. & R. Dept.

Hon. Frank E. Shepard,
Superintendent U. S. Mint,
Denver.

Sir:

In the matter of Dixon and Vesuvius crucibles:

Ingot Melting Room

Melts per crucible

Silver Nickel Bronze

Dixon Special
Vesuvius

30	12	28
30	?	28

The two crucibles give equally satisfactory results in silver and bronze melting.

In nickel melting, a Vesuvius crucible ran five melts and a spill developed on the sixth melt. In another instance, a Vesuvius ran ten melts and the same trouble appeared on the eleventh. Mr. Whitaker accordingly discontinued the use of Vesuvius crucibles for nickel work, preferring the Dixon Specials because the latter stand a higher heat than the Vesuvius crucibles are able to bear.

The melting temperatures are as follows:

Nickel, 2450 degrees; Bronze, 2050; Silver, 1750.

Refinery Melting Room

The Dixon Specials average fifteen melts while the Vesuvius average only eleven. The higher heats required at various times disclose the inferiority of the Vesuvius pots. Mr. Borstadt says:

"The Dixon crucible is more satisfactory on long and intense heats than the Vesuvius. The latter softens somewhat under this condition, and is liable to collapse or pull through the tongs in taking it out of the furnace. This is especially true in the case of sweat melts."

The difference in number of melts secured in ingot and refinery work may be accounted for as follows:

In ingot work only pure metals are melted, while in the refinery, after a crucible has been used for melting fine gold or silver, it is used in making anode, black gold, slimes, or sweat melts. The base contents in these various kinds of melts have a corrosive action on the crucibles tending to deteriorate them more rapidly than would be the

Dixon and Vesuvius Crucibles - 2

case if only pure gold, silver, copper, etc., were being melted in them.

The foregoing data are compiled from the crucibles used this fiscal year and relate to crucibles purchased for this year.

Both foremen earnestly recommend that crucibles be purchased without the customary pouring lip.

Respectfully,

Jarman St. John

Acting Supt. M. & R. Dept.

June 20, 1930.

Order for Refinery

Two Steel Filters, hard rubber-lined on inside, and rubber-covered on outside; 20x34x20 inches deep, inside measurements.

A one-inch ledge around inside, $1\frac{1}{2}$ inches from bottom of filter to bottom of ledge, to hold filtering boards. Ledge about one inch thick. Ledge may be built solid from bottom of filter to top of ledge, if advantageous to the bidder, making an off-set $2\frac{1}{2}$ inches high and 1 inch wide around bottom of filter on the inside.

A two-inch hole in one end, even with bottom of filter, reducing in size at a 10° angle towards the inside of filter. Hole must project out, at a right angle, about $1\frac{1}{2}$ inches from body of filter, with a ring neck or flaring end to securely hold an iron band clamp behind it, without possibility of slipping off.

Make a quarter-inch hole in rim around top of filter, directly above outlet hole.

Filters must be strong enough to carry a load of 1200 lbs. Aveir.

The rubber lining on inside and covering on outside shall consist of a thin layer of soft rubber between the metal surface and the hard rubber, and vulcanized to the metal, and must withstand temperatures from zero to 212 degrees F. of 5% to 6% solutions of free nitric acid containing silver nitrate, lead, copper, and other base metal nitrates.

Joseph W. Milson
Jos. W. Milson, Supt. M. & R. Dept.

Names of bidders for rubber-lined filters:

American Hard Rubber Co.,

#11 Mercer St.,

New York, N. Y.

The Vulcanized Rubber Co.,

#251 - 4th Ave.,

New York, N. Y.

The B. F. Goodrich Rubber Company,

Akron,

Ohio.

M. & R. Dept.

June 30, 1930.

Messrs. H. D. Coleman,
G. V. Maher, and
H. T. Rippeto,
Settlement commission.

Gentlemen:

Your settlement of the M. & R. department of the Denver Mint discloses surpluses as follows:

Gold, 12.153 fine ozs. Silver, 432.27 fine ozs.

The sources of gain and loss composing said items, in so far as we have any account pertaining thereto, are as follows:

	Gains		Losses	
	G.	S.	G.	S.
Purchase silver bars				8.50
Melting uncurrent coin		6.20		
Ingot making	.882	75.80		
Refinery operations	12.332	374.66		
Assayer's account		.05	2.013	
Mass melt		1.21	1.665	
Deposit grains	.620			4.10
Re-deposit reweights	2.788	3.83		
Gov't ingot melt #335				17.08
Coiner's bar #1, 1928	1.425			
Make-up and Vault grains	1.735	3.27		
Bar samples 1928 settlement			1.563	1.45
Differences with Abstract of deposits	.005			.47
Ditto in calculating double tare (homestake)			.140	1.32
Merchant bars & M. & R. exps.			.340	.42
Totals	19.782	465.02	5.721	33.34
	<u>5.721</u>	<u>53.34</u>		
Net gain	14.062	431.68		

Respectfully,

Joe W. Milson
Joe W. Milson, Supt. M. & R. Dept.

M. & R. Dept.

June 30, 1930.

Messrs. H. D. Coleman,
G. V. Maher, and
H. T. Rippeto,
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Gold, 12.153 fine ozs. Silver, 432.27 fine ozs.

The sources of gain and loss composing said items, in so far as we have any account pertaining thereto, are as follows:

	Gains		Losses	
	G.	S.	G.	S.
Purchase silver bars				8.50
Melting uncurrent coin		6.20		
Ingot making	.882	75.90		
Refinery operations	12.332	374.66		
Assayer's account		.05	2.018	
Mass melt		1.21	1.666	
Deposit grains	.620			4.10
Re-deposit reweights	2.786	3.83		
Con'd ingot melt #335				17.08
Coiner's bar #1, 1928	1.425			
Make-up and Vault grains	1.735	3.27		
Bar samples 1929 settlement			1.563	1.45
Differences with Abstract of deposits	.003			.47
Ditto in calculating double bars (Homestake)			.140	1.32
Merchant bars & M. & R. expts.			.840	.42
Totals	19.783	465.02	5.721	33.34
	5.721	33.34		
Net gain	14.062	431.68		

Respectfully,

Jos. W. Milson, Supt. M. & R. Dept.

M. & R. Dept.

August 7, 1930.

Hon. Frank E. Shepard,
Superintendent U. S. Mint,
Denver.

Sir:

I am in receipt of your communication of the 5th inst., designating me as Acting Superintendent of Melting and Refining, pending the permanent appointment of a Superintendent of this department.

I have no hesitancy in accepting the amounts charged by the records of the bookkeeper as being in the custody of this department, and do not believe that a check-up is necessary.

Therefore in compliance with the request in your letter, I am starting operations in the refinery today, and am sending the needed metals thereto, having broken the temporary seals on our bullion vaults for this purpose.

Thanking you for your confidence in me and assuring you of my best efforts in this behalf, I am,

Respectfully,

Jarnum St. John

Acting Supt. M. & R. Dept.

Bullion Available for Refinery at close of business, August 22, 1930.

	<u>Gold, Fine ozs.</u>	<u>Silver, Fine ozs.</u>
Under seal, Vault H	475,820.993	671,515.35
Other available, June 30, 1930	1,105,920.784	1,490,914.39 *
Received since June 30, 1930	<u>84,741.906</u>	<u>76,961.37</u>
Total	1,666,483.683	2,239,391.11
Sent to Refinery	<u>150,220.788</u>	<u>167,594.04</u>
Balance available	1,516,262.895	2,071,797.07

* Exclusive of Fine Gold and Silver, Purchase and Coin bars, Ingot
kings, and Assayer's Proof, and Sweeps.

Note: Total sent to Refinery in

Fiscal year, 1930 (half year)	484,017.062	604,297.08
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Respectfully,

Jarvis St. John.

Acting Supt. M. & R. Dept.

Average Finenesses of Deposits for three Fiscal Years

	Gross Wt.	Gold, F.ozs. Fine		Sil., F.ozs. Fine		Base
1928	1,485,482.06	834,610.383	561.8	528,621.00	355.8	082.4
1929	1,022,026.87	605,703.103	592.6	334,580.35	327.5	080.1
1930	<u>868,706.71</u>	<u>528,461.542</u>	<u>608.3</u>	<u>284,740.46</u>	<u>327.7</u>	<u>064</u>
	3,376,215.64	1,968,775.028	583.1	1,147,921.81	340	076.9
<u>Re-Deposits</u>						
1928	149,693.75	82,452.406	550.8	44,821.08	299.4	149.8
1929	173,601.29	118,478.997	682.4	36,378.58	209.5	108.1
1930	<u>60,477.84</u>	<u>20,338.091</u>	<u>338.2</u>	<u>23,620.71</u>	<u>390.5</u>	<u>273.3</u>
	383,772.88	221,269.494	578.5	104,820.37	273.1	150.4
<u>Totals and Average on all above mentioned bullion</u>						
	3,759,988.52	2,190,044.522	582.4	1,252,742.18	333.1	084.5

August 23, 1930.

M. & R. Dept.

September 5, 1930.

Hon. Frank E. Shepard,
Superintendent U. S. Mint,
Denver.

Sir:

I am in receipt of a communication from Mr. Borstadt, foreman of the refinery, stating that the parting nitric acid used in the refinery contains some iron and that this is causing the lowered fineness of our fine silver product. He says also that the General Chemical Company is willing to furnish two carboys of C. P. acid, or more if necessary, without added expense to the Mint, for the purpose of making a test run in one silver cell. He and two representatives of the company had a conference on the subject yesterday, and they expressed a desire to correct the acid if it is found to be responsible for the contamination of the silver now being produced.

If the test run spoken of resulted in an increased fineness of the silver product, you would seem to be justified in asking for the correction of the parting acid.

I therefore recommend that the offer of the Chemical company be accepted.

Respectfully,

Jarvis St. John

Acting Supt. M. & R. Dept.

M. & R. Dept.

September 25, 1930.

Hon. Frank E. Shepard,
Superintendent U. S. Mint,
Denver, Colo.

Sir:

In compliance with your request, I respectfully submit a preliminary report as follows concerning the crucibles sent to this Mint by the Chicago-Naugatuck Crucible Co., from its western division in Chicago:

The two crucibles were delivered to the respective foremen of the ingot melting room and the refinery melting room on September 2nd. On September 3rd, Mr. Whitaker annealed the crucible and began to use it in the ingot melting room. For seventeen days it was in continuous service in bronze melting, and forty-two melts of bronze ingots were made with it before it was set aside. The rim had become thin and worn down in places allowing the molten metal to run out when the melt was being stirred. It can be used, however, for a number of sweat melts.

Vesuvius and Dixon crucibles have been averaging only about thirty melts for this kind of work in the ingot room. None of the new Dixon crucibles received this fiscal year has been used in ingot work here.

The refinery melting room has not begun its test of the Chicago crucible, because one of the Dixon crucibles received this fiscal year had already been put in service, and Mr. Welsh desires to complete the run on it before making a change. To date, he has gotten sixty-two melts of silver anodes from said Dixon crucible and expects to get many more out of it before setting it aside as being no longer safe for such work. When this takes place, he will begin the use of the Chicago crucible, and you will be duly notified of the results therefrom.

Respectfully,

Farnum St. John

Acting Supt. M. & R. Dept.

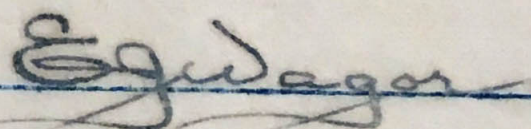
January 8, 1931

Melting and Refining Department, Denver Mint

Rating of employees for six months ended December 31, 1930:

Name	Position	Efficiency	Conduct
St. John, Farnum	Clerk	100	100
Spencer, Geo. N.	Do	100	100
Borstadt, Geo., Jr.	Foreman refinery	100	100
Whitaker, S. R.	" ingot room	100	100
Welsh, W. R.	Foreman ref'y melting room	100	100
Waters, R. C.	Skilled workman	100	100
Arnold, R. G.	Do	100	100
Baskind, Harry	Do	100	100
Bucher, Geo. J.	Do	98	100
Boiswell, W. G.	Melter	98	100
Donahue, J. J.	Do	100	100
Eggert, A. C.	Do	98	100
Brandon, Harry	Helper	96	100
Dardis, W. N.	Do	97	100
Flannery, Frank	Do	96	100
Hobson, J. B.	Do	97	100
McClung, B. F.	Do	97	100
Peirce, R. E.	Do	97	100
Russell, Roy G.	Do	97	100

Respectfully submitted,



Supt. M. & R. Dept.

M. & R. Dept.

June 23, 1931.

Mr. Frank E. Shepard,
Superintendent U. S. Mint,
Denver, Colo.

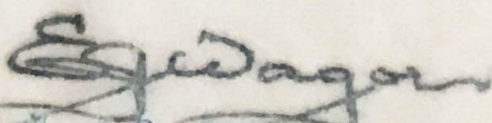
Sir:

Preliminary report under date of Sept. 15, 1930, on a No. 100 graphite crucible furnished for test by the Chicago Naugatuck Crucible Co., showed a service 40% better than the average of either Dixon or Vesuvius crucibles. This run was made in the Ingot melting room in the melting of bronze ingots for coining operations.

The test made on the second crucible in the manufacture of silver anodes for refining operations, indicated 21% less service than the aforementioned crucibles: 62 melts of silver anodes as compared with an average of 79 melts for the Dixon crucible.

These results attest the difficulty of estimating the worth of a crucible where only two or three are submitted for test. However, the findings on the average show that the Chicago-Naugatuck crucibles compare favorably with those of other manufacturers.

Respectfully,


Supt. M. & R. Department.

July 7, 1931.

Melting and Refining Department, Denver Mint

Rating of employees for six months ended June 30, 1931

Name	Position	Efficiency	Conduct
St. John	Clerk	100	100
Spencer Geo. N.	"	100	100
Borstadt, Geo., Jr.	Foreman Refinery	100	100
Whitaker, S.R.	" Ingot room	100	100
Welsh, W.R.	" Ref. Mltg. room	100	100
Waters, R.C.	Skilled workman	100	100
Arnold, R.G.	" "	100	100
Baskind, Harry	" "	100	100
Bucher, G.J.	" "	98	100
Boswell, W.G.	Melter	98	100
Donahue, J.J.	"	100	100
Eggert, A.C.	"	100	100
Brandon, Harry	Helper	97	100
Dardis, W.N.	"	97	100
Flannery, Frank	"	97	100
Hobson, J.B.	"	97	100
McClung, B.F.	"	97	100
Peirce, R.E.	"	97	100
Russell, Roy G.	"	97	100

Respectfully submitted,


 Supt. M. & R. Dept.

M. & R. Dept.

June 30, 1932.

Messrs. A. C. Probey, Chairman,
E. B. Weaver, and
J. W. Steel,
Settlement Commission.

Dear Sirs:

Your settlement of the M. & R. Department of the Denver Mint discloses the following surpluses: Gold, 168.052 fine ounces; Silver, 1,186.89 fine ounces.

In addition to the refinery surplus of 158 ounces in gold, there were various recoveries, such as gains in certificate bar weights, vault sweeps, deposit grains, etc. The refinery had a surplus in silver of 1255.40 ounces.

In the ingot room operations there was a loss of 241 ounces in melting over a half million ounces of uncurrent silver coin; and a gain of ¹²⁰~~100~~ ounces of silver in regular ingot work. These and some small miscellaneous gains and losses leave the department's surpluses as first given above.

The minor coinage wastages of 183 ounces nickel and 762 ounces bronze appear to be normal.

Respectfully,

Farman St. John

Acting Supt. M. & R. Dept.

Arnold

Performs all duties incident to the operation of refining cells in the electrolytic refining of gold bullion; keeping electrolyte standard by daily titrations, renewing anodes and cathodes, removing slimes, washing refined product, and recovering value from waste solutions.

Baskind

Performs all work incident to the operation of refining cells in the electrolytic refining of silver bullion; making daily titrations to maintain a standard electrolyte, renewing silver anodes and stripping deposited silver from cathodes, washing of parted gold and refined silver product, and recovering of values in waste solutions.

In charge of refinery in the absence of the foreman.

Borstadt

Duties involve direct supervision of all operations incident to the electrolytic refining of gold and silver bullion; checking of and receipting for all bullion, manufacturing of gold and silver anodes, and melting of refined product, keeping of standard conditions in refining cells, regulating current density to meet production requirements, making all chemical analyses required in the operations, and recovery of platinum metals. Assigns and lays out work for refinery personnel.

Boswell

Assists in the operation of gold and silver cells; stripping deposited silver from cathodes, renewing anodes, reducing of slimes, rolling of cathodes, washing of refined product, making of standardizing solutions for electrolytes, and recovering values from waste solutions.

Acts as a melter when required.

Bucher

Ditto Boswell

Flannery

Ditto Boswell

Peirce

Ditto Boswell

Russell

Ditto Boswell

-2-

Welsh, Wm.

Direct supervision of all melting which attends refining operations: manufacturing of gold and silver anodes, melting of parted gold, precipitated gold, gold-silver slimes, cement silver, resulting from the process, and the melting of the refined product (gold cathodes and deposited silver). Keeps record of furnace hours and checks all bars used in anode make-up. Supervises recovery of values from slage and sweepings

Eggert

Operates furnaces in the melting of refinery material: gold and silver anodes, parted gold, precipitated gold, gold-silver slimes, gold cathodes, refined silver, and recovery of values from slags and sweepings.

Whitaker

Direct supervision of the manufacture of gold, silver, bronze, and nickel ingots used in coinage operations: melting of the alloys, pickling, topping, and filing of ingots. Keeps record of furnace hours and determines by pyrometer test the proper pouring temperature of each melt.

Donahue

Operates furnace in the manufacture of coinage ingots, and melting of refinery anodes and refined gold and silver.

Hobson

Does all work incident to casting bullion in melting-room operations: handling and greasing moulds, removing cast from mould, topping and filing ingots, scraping crucibles, and cleaning up floor grains.

Brandon

Ditto Hobson

St. John

Calculates, checks, and records all bullion deposits received at the institution, together with record of all charges imposed on such bullion and assay samples taken by the assayer. Keeps accounts incident to the refining of gold and silver bullion which involves ^{besides} a complete ledger account of all bullion handled, the make-up of gold and silver anode melts in which bullion of varying weights and fineness are blended into melts of prescribed weight

St. John (continued)

and fineness. Renders daily to bookkeeper detailed reports of all inter-departmental transactions. Keeps time record of personnel of the department.
Acts as Superintendent of the Melting and Refining Department in the absence of that officer.

Spencer

Calculates alloy to be used in the make-up of melts for the manufacture of coinage ingots and keeps daily record of losses involved in such work. Weighs and records all deliveries of ingots to the Coining Department and receipts from that department of clippings and condemned coin. Keeps detailed record of losses involved in the melting of uncurrent gold and silver coin.
Acts as Deposit Weigh Clerk in the absence of that officer.

Wagor

Supervises all work attending the operation of the manufacture of coinage ingots and the refining of gold and silver bullion and the accounting work necessary to properly record these operations. Receipts to Superintendent for all bullion received at the institution.

M. & R. Dept.

June 30, 1934.

Mrs. Edness K. Wilkins, and
Messrs. F. H. Chaffin,
J. S. Buford, and
R. J. Van Horne,
Settlement Commission.

The settlement of the Melting and Refining department, just ended, shows a Gold surplus of 155,364 fine ozs., and a Silver surplus of 1,993.62 fine ozs.

Besides the refinery gold surplus of 127 ounces, there were various recoveries and gains, such as the Assayer's surplus, mass melting gains, vault sweepings, uncurrent gold coin melting, etc.

The refinery silver surplus was 1,983 ounces. The ingot operations gain of 165 ounces was nearly offset by a loss of 142 ounces in melting uncurrent silver coin.

These and some other small gains and losses leave the department's surpluses as given first above.

The bronze wastage of 626 ounces was the only minor coinage wastage, and appears to be normal.

Respectfully,

Jamm St. John
Acting Supt. M. & R. Dept.

Inventory of Supplies on hand in Melter and Refiner's Department,
U. S. Mint, Denver, Colorado, July 1, 1911.

Ingot Room - First Floor

Graphite, goods	\$313.70	Per 32. 101
Fire clay	52.35	
Mitts, gloves and aprons	55.05	
Brushes	2.25	
Sleeves	5.25	
Fluxes	18.10	
Charcoal	3.45	0.00
Lard Oil	12.00	
Rope	3.40	

Refinery - Second Floor

Laboratory Supplies	\$150.30	
Graphite Goods	1,307.40	
Fire clay	81.98	
Mitts, gloves, and aprons	440.10	
Iron sulphate	17.70	
Porous cells	193.75	
Sleeves	18.15	
Fluxes	71.20	
Charcoal	11.70	
Acids	110.81	
Zinc	12.50	
Gelatine	35.00	

